

A yellow outline map of the state of Missouri, with a small yellow dot in the northwest corner.

State of Missouri

Substance Abuse Prevention Needs Assessment

Integrating Substance Abuse Prevention Data: A Systems Planning Approach for the State of Missouri

**Missouri Department of Mental Health
Division of Alcohol and Drug Abuse**

December 2002

STATE OF MISSOURI SUBSTANCE ABUSE PREVENTION NEEDS ASSESSMENT

INTEGRATING SUBSTANCE ABUSE PREVENTION DATA: A SYSTEMS PLANNING APPROACH FOR THE STATE OF MISSOURI

Prepared for

Missouri Department of Mental Health
Division of Alcohol and Drug Abuse
Michael Couty, Director
(CSAP Contract 277-98-6020)

Prepared by



Mindy Herman-Stahl, Ph.D.
Scott Proescholdbell, M.P.H.

This project was enabled with federal funding provided through:



Substance Abuse and Mental
Health Services Administration

December 2002

Acknowledgments

This report was developed jointly by RTI International* and the Missouri Department of Mental Health (DMH), Division of Alcohol and Drug Abuse (ADA), as part of Missouri's State Prevention Needs Assessment Studies: Alcohol and Other Drugs. RTI is located in Research Triangle Park, North Carolina (phone: 919-541-6000).

This work was supported by the Center for Substance Abuse Prevention (CSAP), Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (DHHS). Joellyn Becker served as the Missouri prevention research coordinator, Valley Rachal and Rebecca Sanchez served as the RTI project directors, Mindy Herman-Stahl served as the RTI study leader, and Jon Dunbar-Cooper served as the CSAP project officer.

The authors would like to acknowledge the contributions of Randy Smith at Missouri ADA, as well as the following RTI staff: Linda B. Fonville and Catherine A. Boykin for their assistance in document preparation, Sharon Davis for her work on the service area profiles, Justine Allpress for creating the maps, Carol Hanchette for helping to conceptualize the GIS component of this study, and Carol Offen and Jill Snider for their editorial assistance.

For further information about the contents of this report, contact:

Missouri Department of Mental Health
Division of Alcohol and Drug Abuse
1706 East Elm Street
Jefferson City, MO 65102
(573) 751-9490

* RTI International is a trade name of Research Triangle Institute.

CONTENTS

Section	Page
Executive Summary	ES-1
Figures.....	iv
Tables.....	vii
 1. BACKGROUND AND SIGNIFICANCE.....	 1-1
1.1 Introduction	1-1
1.2 Conceptual Framework for an Integrated, Research-Based Prevention Planning System	1-1
1.3 Role of the Missouri Division of Alcohol and Drug Abuse	1-4
1.4 Purpose of Study.....	1-6
 2. RESEARCH DESIGN	 2-1
2.1 Other Substance Abuse Prevention Needs Assessment Studies.....	2-1
2.2 Measures	2-2
2.3 Analysis	2-4
2.3.1 Unit of Analysis.....	2-4
2.3.2 Assessing the Association Between Risk and Protective Factors, Social Indicators, and Substance Use Measures	2-5
2.4 Service Area Profiles	2-14
2.5 Service Area Maps.....	2-33
 3. SUMMARY AND RECOMMENDATIONS.....	 3-1
3.1 Recommendations	3-16
 REFERENCES	 R-1

FIGURES

Number	Page
Figure 1.1	Conceptual Framework for a Research-Based Prevention System..... 1-2
Figure 2.1	Missouri Department of Mental Health Division of Alcohol and Drug Abuse Service Areas 2-7
Figure 2.2	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Areas 1 and 13</i> 2-16
Figure 2.3	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 6</i> 2-17
Figure 2.4	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 7</i> 2-18
Figure 2.5	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Areas 8 and 12</i> 2-19
Figure 2.6	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 9</i> 2-20
Figure 2.7	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 10</i> 2-21
Figure 2.8	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 11</i> 2-22
Figure 2.9	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 14</i> 2-23
Figure 2.10	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 15</i> 2-24
Figure 2.11	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 16</i> 2-25
Figure 2.12	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 17</i> 2-26
Figure 2.13	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Areas 18 and 19</i> 2-27
Figure 2.14	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 20</i> 2-28
Figure 2.15	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 21</i> 2-29
Figure 2.16	Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 22</i> 2-30

FIGURES (continued)

Number	Page
Figure 2.17 Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 23</i>	2-31
Figure 2.18 Prevention Needs Assessment and Planning Profile for <i>Missouri Service Area 24</i>	2-32
Figure 2.19 Past Month Alcohol Use Rate by Service Area	2-37
Figure 2.20 Rate of Binge Drinking in the Past Two Weeks by Service Area	2-38
Figure 2.21 Past Month Tobacco Use Rate by Service Area	2-39
Figure 2.22 Past Month Marijuana Use Rate by Service Area	2-40
Figure 2.23 Past Month Stimulant Use Rate by Service Area	2-41
Figure 2.24 Past Month Use of Any Illicit Drug by Service Area	2-42
Figure 2.25 Past Month Substance Use (any use of Alcohol, Tobacco, or Any Illicit Drug) by Service Area	2-43
Figure 2.26 Antisocial Behavior Rate by Service Area	2-44
Figure 2.27 Gang Involvement Rate by Service Area.....	2-45
Figure 2.28 Laws Related to Substance Use by Service Area	2-46
Figure 2.29 Perceived Availability of Alcohol, Tobacco, and Illicit Drugs by Service Area.....	2-47
Figure 2.30 Total Community Risk Score by Service Area.....	2-48
Figure 2.31 Total Community Protection Score by Service Area.....	2-49
Figure 2.32 School Commitment by Service Area.....	2-50
Figure 2.33 Total School Risk Score by Service Area.....	2-51
Figure 2.34 Total School Protection Score by Service Area.....	2-52
Figure 2.35 Parental Monitoring by Service Area	2-53
Figure 2.36 Total Family Risk Score by Service Area.....	2-54
Figure 2.37 Total Family Protection Score by Service Area	2-55
Figure 2.38 Initiation of Substance Use by Service Area	2-56
Figure 2.39 Perceived Risk of Harm from Alcohol, Tobacco, or Marijuana Use.....	2-57
Figure 2.40 Attitudes Toward Antisocial Behavior and Substance Use by Service Area	2-58
Figure 2.41 Total Peer-Individual Risk Score by Service Area.....	2-59

FIGURES (continued)

Number	Page
Figure 2.42 Total Peer-Individual Protection Score by Service Area	2-60
Figure 2.43 Overall Risk by Service Area	2-61
Figure 2.44 Percentage of Children Living Below Poverty Level by Service Area	2-62
Figure 2.45 Liquor Outlet Density Rate by Service Area	2-63
Figure 2.46 Sexually Transmitted Disease and/or HIV/AIDS Rate by Service Area	2-64
Figure 2.47 Birth Rate for Females Aged 10 to 17 Years by Service Area	2-65
Figure 2.48 Juvenile Substance Abuse Treatment Admissions by Service Area.....	2-66
Figure 2.49 Service Area Risk for Youth Alcohol Use based on Integrated Risk Factors with the Highest Correlation to Use.....	2-67
Figure 2.50 Service Area Risk for Youth Tobacco Use based on Integrated Risk Factors with the Highest Correlation to Use.....	2-68
Figure 2.51 Service Area Risk for Youth Binge Drinking based on Integrated Risk Factors with the Highest Correlation to Use.....	2-69
Figure 2.52 Service Area Risk for Youth Marijuana Use based on Integrated Risk Factors with the Highest Correlation to Use.....	2-70
Figure 2.53 Service Area Risk for Youth Stimulant Use based on Integrated Risk Factors with the Highest Correlation to Use.....	2-71
Figure 2.54 Service Area Risk for Youth Illicit Drug Use based on Integrated Risk Factors with the Highest Correlation to Use.....	2-72

TABLES

Number	Page
Table 2.1	Studies that Make Up Missouri’s State Prevention Needs Assessment: Alcohol and Other Drugs 2-1
Table 2.2	Prevention Constructs from the Missouri 2000 Student Survey (Greene & Rachal, 2001) Used in the Prevention Integrative Study 2-3
Table 2.3	Social Indicators Included in the Prevention Integrative Study..... 2-4
Table 2.4	Association Between Community, School, Family, Peer, and Individual Risk Factors and Lifetime Substance Use (<i>N</i> = 17) 2-5
Table 2.5	Association Between Community, School, Family, Peer, and Individual Risk Factors and Past Month Substance Use (<i>N</i> = 17)..... 2-9
Table 2.6	Associations Between Community, School, Family, Peer, and Individual Protective Factors and Lifetime Substance Use (<i>N</i> = 17) 2-11
Table 2.7	Associations Between Community, School, Family, Peer, and Individual Protective Factors and Past Month Substance Use (<i>N</i> = 17) 2-12
Table 2.8	Associations Between Social Indicators and Lifetime Alcohol, Tobacco, and Marijuana Use (<i>N</i> = 17) 2-13
Table 2.9	Association Between Social Indicators and Antisocial Behavior and Gang Involvement (<i>N</i> = 17)..... 2-14
Table 2.10	Summary of Where Service Areas Fall on Measures of Past Month Substance Use 2-34
Table 2.11	Summary of Where Service Areas Fall on Risk Measures..... 2-35
Table 2.12	Summary of Where Service Areas Fall on Integrated Measures of Substance Use Risk..... 2-36
Table 3.1	Abbreviated CSAP Model Program Matrix..... 3-5
Table 3.2	CSAP Model Programs and the Domains They Are Designed to Impact 3-13

1. BACKGROUND AND SIGNIFICANCE

1.1 Introduction

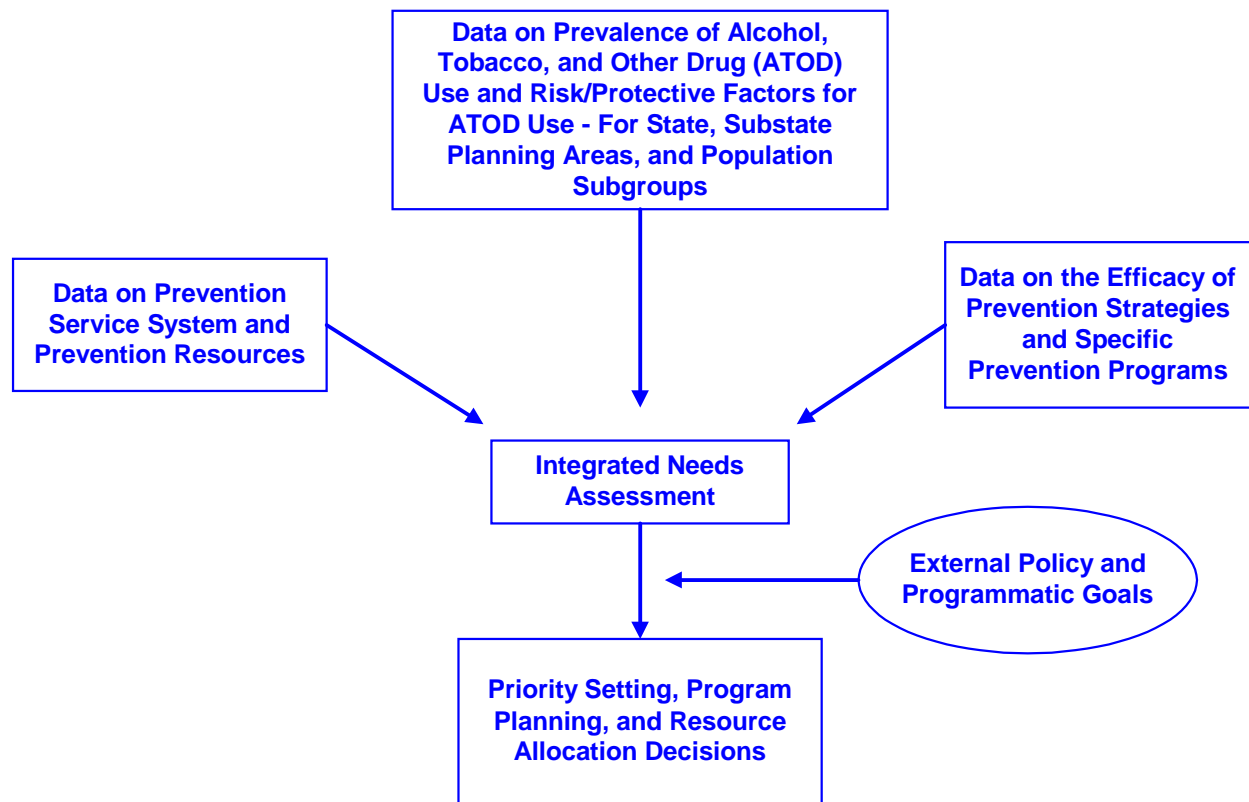
Under the sponsorship of the Center for Substance Abuse Prevention (CSAP), a number of States have conducted substance abuse prevention needs assessment projects. The purpose of these projects are (1) to assess information on the incidence (initiation) and prevalence (pervasiveness) of youth drug use within the State; (2) to obtain information on the precursors (risk and protective factors) or correlates (e.g., social indicators) of youth drug use in order to prioritize specific high-risk populations and geographic areas; and (3) to investigate the extent and availability of community-based prevention services available for youth. Most States completed school surveys, social indicator studies (analysis of archival indicators), and community resource assessments (studies of substance abuse prevention resources) as part of the overall needs assessment strategy. Important methodological and substantive advances in conducting needs assessment studies were achieved through this CSAP initiative, and many States have applied their findings for planning and program development both at the State and local level. However, there remains an absence of integrative models that demonstrate the advantages of combining data from multiple needs assessment studies into a comprehensive research-based prevention planning framework.

1.2 Conceptual Framework for an Integrated, Research-Based Prevention Planning System

States attempting to advance their prevention systems are moving toward science or research-based approaches to guide policy and programmatic decision-making. A research-based approach utilizes objective data and empirically proven programs to maximize prevention effectiveness (see Figure 1.1).

A central feature of research-based planning models is that they rely on objective and quantitative data to guide and justify planning and resource allocation decisions. Thus, an integrated approach to prevention planning requires the systematic collection of data from multiple sources. Objective data are needed to identify high-risk populations, characterize the diverse types of prevention needed across these groups, justify the approaches selected, and assess the effectiveness of those efforts. Data also are needed to assess the nature and extent of and gaps in the current array of available prevention services (Arthur & Blitz, 2000). Collection and utilization of prevention-related data to inform service provision is increasingly being required by Federal agencies that provide prevention resources to the State, as demonstrated by the information now requested in the Federal Substance Abuse Prevention and Treatment

Figure 1.1 Conceptual Framework for a Research-Based Prevention System



(SAPT) Block Grants, the State Incentive Cooperative Agreement grant applications, and the Government Performance and Results Act (GPRA) outcome measures. The Substance Abuse and Mental Health Services Administration (SAMHSA) also plans to hold States more accountable for measuring outcomes with the replacement of the SAPT with Performance Partnership Grants (PPGs). PPGs are intended to enhance State flexibility, while concurrently increasing efforts to measure progress toward achieving performance goals (SAMHSA, 2002). Thus, accurate and comprehensive data collection and management systems play an integral role in effective prevention service systems.

An integrated, research-based prevention system also utilizes proven strategies and programs for the purpose of decreasing or delaying substance use. Proven strategies, activities, approaches, and programs are those that (1) have been shown through research and evaluation to be effective in the prevention and/or delay of substance use/abuse; (2) are grounded in a clear theoretical framework and have been carefully implemented; (3) include evaluation findings that have been subjected to critical review by other researchers; and (4) have been replicated and have produced desirable results in a variety of settings (CSAP, 2002). Use of proven strategies is

expected to maximize the effectiveness of limited prevention resources and, ultimately, to decrease the public health burden of addiction to the State.

Assessing State prevention resources is an integral component of an effective prevention planning system. Systematic assessment of resources can assist planners by

- improving the match between prevention needs and existing resources;
- avoiding duplication of services and filling gaps;
- improving accountability and tracking costs; and
- promoting a comprehensive health care system.

Resources include policies, programs, staff, or funds that can be devoted to reducing the incidence and prevalence of alcohol, tobacco, and other drug (ATOD) abuse or risk factors for abuse (Arthur, Shavel, Tremper, Hawkins, & Hansen, 1997).

A comprehensive prevention approach also recognizes the potential influence of the policy objectives and programmatic goals of the agencies, which may be driven by factors other than research findings and data (e.g., politics). Because this report focuses on the use of data to guide decision-making, we will not be discussing the influence of these external objectives.

A research-based prevention approach has much to offer the State of Missouri in addressing alcohol and drug use among youth. Research on the causes, consequences, and prevention of substance use and abuse has made great strides over the last few decades. A large body of information is now available that identifies the individual, family, school, and community factors that predict substance abuse (Hawkins, Catalano, & Miller, 1992). Because risk factors precede the development of substance abuse behaviors, they have become a fundamental component in the process of assessing the risk status and prevention needs of individuals and/or population subgroups.

Knowledge of risk and protective factors also has been used to develop science-based prevention programs that target specific factors (e.g., poor family management, low social skills, low school achievement) known to be associated with substance use and abuse. A growing body of evidence documents evidence-based prevention programs that have been evaluated using scientifically rigorous designs and have been shown to lower substance use or decrease the associated risk factors. Many of these programs have been successfully adapted for diverse communities and catalogued in publications such as the National Institute of Drug Abuse's *Preventing Drug Use Among Children and Adolescents: A Research-Based Guide* (NIDA, 1997) and CSAP's *Promising and Proven Substance Abuse Prevention Strategies* (CSAP, 2002).

Principles of efficacious prevention programs and policies also have been broadly disseminated via Federal initiatives such the Department of Education's Principles of Effectiveness, which are required for recipients of Safe and Drug-Free Schools and Community Act funds and CSAP's National Registry of Effective Prevention Programs (NREPP). NREPP provides web-based access to information about proven programs that have been certified through a rigorous review process overseen by CSAP and the Center for the Advancement of Prevention. Thus, in a research-based, comprehensive prevention system, information on the prevalence of substance use and risk indices, as well as the availability and effectiveness of prevention strategies, are integrated and analyzed at various geographic levels to inform planning and resource allocation.

Fortunately, recent developments in prevention research and information management systems provide exceptional new tools, such as the geographic information system (GIS), for supporting integrated prevention systems. GIS, a geographic database management system, provides users with a powerful set of tools for viewing and analyzing geographic data and performing spatial analysis. The data consist of a series of spatially referenced map layers that contain information about features that are located in specific geographic areas.

GIS functions have the potential to be extremely useful to prevention decision-making and program administration responsibilities. The most commonly used function of GIS is map production. Maps provide the viewer with a visual picture of the distribution of features across a geographic area and the relationships among them. Other commonly used GIS functions include geocoding, distance computations, spatial queries, buffering techniques, and overlay analysis. Geocoding is the process of linking a record in a non-spatial database to a geographic feature or location in the map layer through a geographic identifier such as State, county, zip code, census tract, or street address. Geocoding can be used to link risk factors and substance abuse data to geographic entities for mapping and analysis. In this study, GIS is used to integrate data from a widely implemented school survey with archival social indicators to inform substance abuse prevention planning at the service area level.

1.3 Role of the Missouri Division of Alcohol and Drug Abuse

The Division of Alcohol and Drug Abuse (ADA) is the single State authority designated in Missouri to administer the SAPT Block Grant funds. The SAPT is the primary source of funding for APA's provision of substance abuse prevention and treatment services. ADA "strives to reduce the number of persons needing [substance abuse] treatment through an extensive prevention effort" (ADA's web site, <http://www.modmh.state.mo.us/ada/prevention.htm>, December 2002). ADA seeks to achieve five outcomes: decrease binge drinking among college students, increase the age of first

substance use by youth, decrease the numbers of youth ever having used substances, decrease the incidence of youth substance use, and reduce risk factors for youth substance use.

Missouri's Department of Mental Health has developed a Strategic Plan to guide decisions regarding substance abuse prevention. The Strategic Plan focuses on 9 objectives that reflect the department's vision, mission, and values. Services administered by the Department's operating divisions, including ADA, must be designed and provided in a manner consistent with the Strategic Plan. There are two Objectives directly related to substance abuse prevention: Decrease binge drinking among college students and increase age of first use of alcohol and other drugs. An important component of the plan is the need for science-based prevention programming. In fact, one of its key strategies is to "implement science-based prevention programming addressing individual, peer, family, community, and environmental risk factor domains."

Missouri's primary prevention program is administered under the direction of the ADA Director of Prevention Services. Missouri's primary prevention program is built on an infrastructure of 11 regional support centers, formerly called the Regional Support Center Network, and school- and community-based programs. The regional support centers (The Missouri Substance Abuse Prevention Resources Network) provide training, technical assistance, and capacity-building services to local community partnerships, coalitions, and task forces. These teams and coalitions are comprised of volunteers from the community. Local citizens have come together to address the substance abuse issues of their community. The program is administered under the direction and oversight of the Prevention Coordinator and Regional Office professional staff. Centralized resource sharing is accomplished through the Statewide Prevention Resource Center operated by the Missouri Association of Community Task Forces.

The Missouri school-based initiative (Missouri SPIRIT) introduces proven, evidence-based strategies to reduce individual-peer and school risk factors, increase protective factors, and reduce the incidence and prevalence of alcohol, tobacco, and other drug use and abuse.

Missouri's community-based prevention program has two components: a high risk youth initiative and community-based prevention services for youth. The high-risk youth initiative provides a broad array of prevention programming in designated areas of the state. Programming includes traditional after school alternative activities, youth development activities and racial/ethnic cultural activities. The community-based prevention services for youth component introduces proven, evidence-based strategies to reduce individual-peer and family risk factors, increase protective factors, and reduce the incidence and prevalence of alcohol, tobacco, and other drug use and abuse.

State laws and policies also play an important role in preventing substance use among Missouri youth. For instance, the State has created or complies with numerous public laws and policies designed to reduce youth substance use. Missouri State law prohibits the sale of tobacco to anyone under the age of 18. Merchants are required to post a State law sign at every tobacco display, including cigarette machines (Missouri State Statute 407.926–407.927). In addition, Federal SYNAR regulations,¹ administered by the U.S. Department of Health and Human Services (DHHS), require all States (1) to establish laws that make it illegal to sell or distribute tobacco products to any individual under the age of 18 and (2) to enforce such laws in a way that can be reasonably expected to reduce youth access to tobacco products. States must also measure compliance through random, unannounced inspections. Missouri has used a combination of law enforcement and merchant education to bring the noncompliance rate of youth tobacco sales down to 16.7% (lower than the SYNAR target rate of 20%). The State has also instituted law suits against three tobacco retailers that have high rates of youth tobacco sales. In 2001, the Missouri legislature agreed to allot \$22.2 million of the tobacco settlement money to a comprehensive prevention plan that will help communities develop antismoking education programs and fund a statewide media campaign against smoking. A mass media campaign against youth tobacco use, including anti-tobacco messages on billboards, in theater productions, and on radio spots, has also been implemented.

Evaluation is another important tool for continually improving the prevention delivery system. In 1998 an evaluation of the Community 2000 Program recommended conducting targeted prevention activities, evaluating division-sponsored prevention efforts, conducting strategic planning for prevention, collaborating with other State agencies, and expanding the target population beyond the school-aged. The Prevention Internal Study Working Group was also formed and reiterated a three-pronged vision for Missouri, which included (1) pursuing target populations as partners; (2) requiring adequate resources and collaboration to carry out a comprehensive prevention system resulting in policies and programs that promote healthy lifestyles; and (3) delivering powerful messages and effective services through the utilization of research-based prevention strategies.

1.4 Purpose of Study

In keeping with the above recommendations, the purpose of this study is to promote the use of research-based prevention by integrating and applying empirical data and utilizing state-of-the-art technology to examine the geographic distribution of substance use, risk factors, and other indicators associated with high-risk communities. This information is critical for

¹The SYNAR Amendment is a law passed by Congress in 1992 requiring each State to have and enforce an effective law prohibiting the sale of tobacco products to children under 18 years of age.

identifying target populations and selecting prevention strategies that have proven effective in meeting identified community needs. The specific objectives of the Missouri Prevention Integrative Study are as follows:

- To assist prevention professionals in determining priority foci for Statewide public policy and prevention programming by integrating data on adolescent risk and protective factors, substance use and delinquent behavior, and community indicators of social problems;
- To utilize state-of-the-art technologies like GIS for accessing, viewing, and mapping the geographic distribution of substance use and antisocial behavior, risk and protective factors, and social indicators at the service area level; and
- To promote the use of data-driven approaches within a comprehensive, research-based prevention system in order to identify, select, disseminate, and implement best practices for substance abuse prevention for Missouri youth.

2. RESEARCH DESIGN

2.1 Other Substance Abuse Prevention Needs Assessment Studies

Over the past several years, the State of Missouri has been involved in a comprehensive effort to collect empirical information on the extent of alcohol and drug use and on the need for substance abuse prevention and treatment services among diverse populations. The Missouri State Needs Assessment Studies: Alcohol and Other Drugs was designed to identify populations and geographic areas at greatest risk for substance abuse problems. The four studies constituting this project are described below in Table 2.1.

Table 2.1 Studies That Make Up Missouri's State Prevention Needs Assessment: Alcohol and Other Drugs

Study	Purpose	Method
1. Substance Use, Delinquent Behavior, and Risk and Protective Factors Among Students in the State of Missouri 2000 (Greene & Rachal, 2001)	To assess the prevalence of substance use, delinquent behaviors, and community, school, family, and peer/individual risk and protective factors of adolescents enrolled in public or private schools in Missouri.	Collected survey data from 254 public and private schools in Missouri. Almost 10,000 students were surveyed in grades 6, 8, 10, and 12. The overall response rate was 65%.
2. Substance Use Prevention Needs in Missouri Counties: A Risk Assessment Using Social Indicators (Sanchez & Weimer, 2002)	To characterize counties with respect to substance abuse prevention needs using indicator data obtained from archival sources.	Obtained 44 social indicators for each county for the 5 most recent years available. These indicators were reduced to represent fewer risk constructs. The standardized values of the risk constructs were presented as county profiles, thus providing a way to compare counties to the State average on all constructs.
3. Missouri State Prevention Resource Assessment (Spencer, 2002)	To assess substance abuse prevention resources administered by State departments and agencies.	Developed a survey instrument and data collection protocol to use to survey State agencies on the content, objective, and distribution of substance abuse prevention resources throughout the State.

(continued)

Table 2.1 (continued)

Study	Purpose	Method
4. Integrative Findings from the Missouri Substance Abuse Prevention Needs Assessment Project	To integrate data regarding the prevalence of substance use and other problem behaviors, risk and protective factors, and community archival indicators, and to assist the State in identifying high-risk areas for the purpose of planning and resource allocation.	Using GIS, integrated various prevention-related constructs to provide mapping and spatial analysis of prevention-related constructs.

2.2 Measures

Data on adolescent risk and protective factors, substance use, and delinquent behaviors assessed in the 2000 Missouri School Survey and the Federal and State archival data from the Social Indicator study are used in this report. (Unfortunately, data on prevention resources were not available at the time the Prevention Integrative Study was being completed.) A list of prevention-related constructs that were collected as part of the school survey is included in Table 2.2. Risk and protective factors to be included in the integrative framework were selected based on salience with regard to Missouri's strategic plan as well as empirical evidence indicating an association between the factors and substance use measures. Information about the social indicators included in the integrative study and their sources is provided in Table 2.3.

Table 2.2 Prevention Constructs from the Missouri 2000 Student Survey (Greene & Rachal, 2001) Used in the Prevention Integrative Study

Communities That Care: School Survey
<p>Community Factors</p> <p><i>Risk</i> – Low neighborhood attachment, community disorganization, personal transitions and mobility, community transitions and mobility, norms favorable toward drug use, laws favorable toward drug use, perceived availability of drugs.</p> <p><i>Protection</i> – Opportunities for conventional involvement, reward for conventional involvement.</p> <p>School Factors</p> <p><i>Risk</i> – Academic failure, little commitment to school, school absenteeism.</p> <p><i>Protection</i> – Opportunities for positive involvement, reward for positive involvement.</p> <p>Family Factors</p> <p><i>Risk</i> – Poor family management, poor discipline, conflict, history of antisocial behavior, parental attitudes favorable toward drug use, parental attitudes favorable toward antisocial behavior.</p> <p><i>Protection</i> – Opportunities for positive involvement, reward for positive involvement.</p> <p>Peer/Individual Factors</p> <p><i>Risk</i> – Rebelliousness, early initiation of substance use, early initiation of antisocial behavior, impulsiveness, antisocial behavior, attitudes favorable toward antisocial behavior, attitudes favorable toward drug use, perceived risk of drug use, interaction with antisocial peer, peer substance use, sensation seeking, reward for involvement in antisocial behavior.</p> <p><i>Protection</i> – Social skills, belief in the moral order.</p> <p>Substance Use – alcohol, tobacco, marijuana, hallucinogens, cocaine/crack, inhalants, stimulants/methamphetamine, other illicit drugs</p> <p>Lifetime substance use, past month use, frequent use, binge drinking.</p> <p>Antisocial Behaviors</p> <p>Got suspended, carried a gun in neighborhood, sold illegal drugs, stole a vehicle, got arrested, attacked someone, was drunk at school, took a gun to school, involved with a gang.</p>

Table 2.3 Social Indicators Included in the Prevention Integrative Study

Social Indicator Study
<i>Juvenile arrests for liquor law violations</i> – Arrests for alcohol violations per 1,000 juveniles aged 10 to 17 years. 1994–1998 data taken from the Uniform Crime Reports County Data.
<i>Juvenile arrests for drug possession</i> – Arrests for drug use/possession per 1,000 juveniles aged 10 to 17 years. 1994–1998 data taken from the Uniform Crime Reports County Data.
<i>Juvenile treatment admissions</i> – juvenile admission treatment rate for alcohol and/or drugs. 1996–2000 data from the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse, Client Tracking, Registration, and Commitment Database.
<i>Juvenile arrests for violent, property, or non-ATOD crimes</i> – Arrests for violent crimes (murder, rape, robbery, and aggravated assault) per 1,000 juveniles aged 17 years or younger; arrests for property crimes (burglary, larceny, motor vehicle theft, and arson) per 1,000 juveniles aged 17 years or younger, and arrests for other crimes (nonaggravated assault, forgery/counterfeiting, fraud, embezzlement, stolen property, vandalism, weapons violations, prostitution/common vice laws, other sex offenses, gambling, crimes against the family, disorderly conduct, and suspicion) per 1,000 juveniles aged 17 years or younger. 1994–1998 taken from the Uniform Crime Reports County Data.
<i>Population density</i> – Total population per square mile.
<i>Percent children living in poverty</i> – Percentage of children under the age of 18 (for whom poverty status was determined) in families with incomes below the Federal poverty threshold.
<i>Divorce</i> – Number of divorces per 1,000 total population. 1991–1999 data taken from the Missouri Vital Statistics.
<i>Retail liquor outlet density</i> – Number of retail liquor outlets/permits per 1,000 persons. 1995–1999 data taken from the Missouri Department of Public Safety.
<i>Low achievement test scores</i> – Percentage of graduates who scored below the national average). 1995–1998 data taken from the Grade 9-12 Dropout Report.
<i>Birth rates among females aged 10 to 17 years</i> – Number of live births per 1,000 women aged 10 to 17 years. 1994–1998 data taken from Missouri Vital Statistics.
<i>Sexually transmitted disease (STD)/HIV/AIDS rate</i> – Number of cases of gonorrhea, syphilis, and chlamydia per 100,000 persons; number of cases of AIDS per 100,000 persons; number of new HIV cases per 100,000 persons. 1995–1999 data taken from Missouri Department of Health, Division of Environmental Health and Communicable Diseases.

Note: See Substance Use Prevention Needs in Missouri Counties: A Risk Assessment Using Social Indicators (Sanchez & Weimer, 2002) for more information on social indicators.

2.3 Analysis

2.3.1 Unit of Analysis

The stratified sampling plan and weights from the student school survey were not designed to support prevalence rates of substance use and risk factors at the county level; thus, the school survey data were aggregated to the service area level. Three service areas had to be collapsed because of small sample sizes; they were combined based on geographic proximity and

demographic similarity (i.e., Service Areas 8 and 12, 13 and 1, and 18 and 19). Thus, 17 areas are included in this study. (Service Areas are numbered 1–24, but exclude 2–5.) The final geographic units that were analyzed and mapped are shown in Figure 2.1, on page 2-7. Analyses of school survey data were restricted to the public school sample.

2.3.2 Assessing the Association Between Risk and Protective Factors, Social Indicators, and Substance Use Measures

To determine which of the numerous prevention-related constructs are most useful for prevention planning at the aggregate level, we used results from the correlational analyses in the following tables to examine the strength of associations between risk and protective factors and substance use, social indicators and substance use, and social indicators and antisocial behavior. Based on these findings, as well as on other considerations such as Missouri’s strategic plan, we selected a subset of variables that appeared most useful for prevention planning in order to map and profile at the service area level. Correlational results are provided below.

Table 2.4 displays the associations between aggregated measures of lifetime alcohol, tobacco, marijuana, and illicit drug use and community, school, family, peer, and individual risk factors. The overall community risk variable was strongly associated with substance use measures, particularly alcohol use. This association was predominantly accounted for by strong correlations between ATOD use and measures reflecting community social norms favorable to substance use, high perceived availability of substances in the community, and limited

Table 2.4 Association Between Community, School, Family, Peer, and Individual Risk Factors and Lifetime Substance Use (*N* = 17)

Risk Factor	Lifetime Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug
Community Risk				
Low neighborhood attachment	.66**	.42	.59*	.54*
High community disorganization	.40	.18	.39	.41
High personal transitions	.23	.14	.30	.31
High community transitions	.30	.42	.17	.19
Favorable norms toward substance use	.87**	.67**	.75**	.74**
Lax laws related to substance use	.83**	.66**	.72**	.71**
High perceived drug availability	.91**	.67**	.80**	.80**
Total community risk	.78**	.59*	.67**	.67**

(continued)

Table 2.4 (continued)

Risk Factor	Lifetime Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug
School Risk				
High academic risk	.29	.40	.15	.09
Low commitment to school	.90**	.68**	.82**	.80**
High school absenteeism	.08	-.04	.31	.40
Total school risk	.81**	.65**	.76**	.73**
Family Risk				
Poor family management	.80**	.49*	.69**	.66**
Poor discipline	.84**	.53*	.78**	.75**
High family conflict	.74**	.49*	.62**	.63**
Family history of antisocial behavior	.73**	.55*	.57*	.58*
Parental attitudes favorable toward substance use	.84**	.64**	.66**	.65**
Parental attitudes favorable toward antisocial behavior	.72**	.48*	.62**	.65**
Total family risk	.81**	.54**	.70**	.69**
Peer Risk				
High associations with deviant peers	.13	-.18	.50*	.53*
High peer drug use	.94**	.75**	.82**	.83**
Individual Risk				
High rebelliousness	.68**	.57*	.56*	.71**
High impulsiveness	.45	.39	.53*	.60*
High sensation seeking	.78**	.61**	.59*	.68**
Early initiation of substance use	.79**	.87**	.61**	.66**
Early antisocial behaviors	-.24	-.40	.14	.16
High current antisocial behaviors	.05	-.11	.41	.45
Favorable attitudes toward antisocial behavior	.80**	.59*	.86**	.95**
Favorable attitudes toward substance use	.92**	.66**	.86**	.87**
Low perceived risks of substance use	.66**	.26	.87**	.85**
High perceived rewards for antisocial behavior	.86**	.76**	.71**	.75**
Total peer-individual risk score	.91**	.73**	.86**	.92**
Total risk score	.91**	.69**	.82**	.83**

* $p < .05$

** $p < .01$

Figure 2.1



enforcement of ATOD laws. Low neighborhood attachment was associated with alcohol, marijuana, and illicit drug use but not tobacco use. Other community measures assessing disorganization and transitions were not correlated with ATOD use. Among the school variables, only low commitment to school (and the total score) were related to ATOD use. Poor grades and high absenteeism did not correlate with ATOD use. All of the family risk variables were associated with youth ATOD use. The correlations were particularly strong for alcohol use. Service areas with high proportions of families with poor parental monitoring skills (i.e., keeping track of where children are and what they are doing when they are not with parents), poor use of family disciplinary techniques, and high family conflict had higher rates of ATOD use. Similarly, service areas with a large number of families that held favorable attitudes toward substance use and antisocial behavior were more likely to have higher rates of ATOD use. High peer drug use had the strongest correlation with ATOD use, particularly for alcohol. Associations with antisocial or deviant peers were correlated with marijuana and illicit drug use but not with alcohol or tobacco use. The individual risk variable most strongly correlated with ATOD use was favorable attitudes. Service areas with the highest rates of youth reporting favorable attitudes toward substance use also had the highest rates of self-reported use. Personal characteristics such as rebelliousness, sensation seeking, and impulsiveness were also associated with ATOD use. Early initiation of substance use was associated with use of other drugs, but early initiation of antisocial behaviors did not relate to ATOD use. Beliefs about the risks associated with ATOD use were related to self-reported use of alcohol, marijuana, and illicit drugs but not to self-reported tobacco use.

Patterns of association between past month ATOD use and risk factors were similar to those of lifetime use (see Table 2.5), but the correlations were lower and there were fewer significant correlations for illicit drug use. Again, for the community variables, the most important correlates of past month use reflected high availability, social norms favorable to use, and little fear of being caught by police. Among the school risk factors, low commitment was the only significant correlate of past month ATOD use. In general, family risk variables were significant correlates of alcohol and marijuana use but not of tobacco or other illicit drug use. Parental attitudes favorable to substances were the strongest correlate of alcohol use, whereas poor family discipline was the strongest correlate of marijuana use. High peer drug use was strongly associated with all substance use measures except illicit drug use. There were some distinctions between risk factors that correlated with past month licit versus illicit drug use. High sensation seeking, early initiation of substance use, and high perceived rewards for antisocial behavior were related to alcohol and tobacco use but not to the use of any illicit drugs. In contrast, impulsiveness, antisocial behavior, favorable attitudes toward antisocial behavior, and low perceived risks of use were related to marijuana and other illicit drug use but not to the use

Table 2.5 Association Between Community, School, Family, Peer, and Individual Risk Factors and Past Month Substance Use (N = 17)

Risk Factor	Past Month Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug
Community Risk				
Low neighborhood attachment	.57*	.34	.52*	.33
High community disorganization	.34	-.06	.44	.32
High personal transitions	.28	.19	.29	.28
High community transitions	.36	.39	.01	-.03
Favorable norms toward substance use	.82**	.51*	.59*	.40
Lax laws related to substance use	.79**	.54*	.59*	.42
High perceived drug availability	.88**	.58*	.60*	.40
Total community risk	.74**	.48	.53*	.37
School Risk				
High academic risk	.28	.46	.11	.05
Low commitment to school	.83**	.63**	.64**	.49*
High school absenteeism	-.05	-.29	.42	.50*
Total school risk	.71**	.58*	.64**	.52*
Family Risk				
Poor family management	.76**	.41	.56*	.32
Poor discipline	.79**	.46	.62**	.40
High family conflict	.71**	.37	.52*	.34
Family history of antisocial behavior	.74**	.44	.45	.26
Parental attitudes favorable toward substance use	.85**	.53*	.49*	.28
Parental attitudes favorable toward antisocial behavior	.72**	.35	.57*	.42
Total family risk	.79**	.44	.56*	.35
Peer Risk				
High associations with deviant peers	.04	-.22	.58*	.58*
High peer drug use	.93**	.75**	.64**	.48

(continued)

Table 2.5 (continued)

Risk Factor	Past Month Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug
Individual Risk				
High rebelliousness	.71	.40	.39	.27
High impulsiveness	.44	.27	.52*	.61*
High sensation seeking	.84**	.54*	.43	.31
Early initiation of substance use	.76**	.68*	.39	.35
Early antisocial behaviors	-.30	-.43	.25	.31
High current antisocial behavior	.02	-.09	.55*	.71**
Favorable attitudes toward antisocial behavior	.77**	.42	.71**	.65**
Favorable attitudes toward substance use	.94**	.65**	.68**	.50*
Low perceived risks of substance use	.65**	.25	.84**	.78**
High perceived rewards for antisocial behavior	.89**	.65**	.43	.29
Total peer/individual risk score	.90**	.62**	.67**	.57*
Total risk score	.88**	.57*	.65**	.48

* $p < .05$ ** $p < .01$

of alcohol or tobacco. Favorable attitudes toward use were correlated with all four measures of ATOD use.

The patterns of association between protective factors and ATOD use differed from the patterns of association between risk factors and ATOD use (see Table 2.6). Only school and individual protective factors were associated with ATOD use. Protective factors had negative associations such that higher levels of protection were associated with lower levels of ATOD use. More specifically, service areas with a large proportion of youth reporting opportunities and rewards for positive involvement at school had lower levels of ATOD use. In addition, service areas in which youth reported high levels of social skills and moral beliefs also had lower levels of ATOD use.

Table 2.6 Associations Between Community, School, Family, Peer, and Individual Protective Factors and Lifetime Substance Use (N=17)

Protective Factor	Lifetime Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug Use
Community Protective Factors				
Opportunities for conventional involvement	.47	.29	.21	.18
Rewards for community involvement	.21	.26	-.10	-.07
Total community protection score	.41	.29	.13	.11
School Protective Factors				
Opportunities for positive involvement	-.59*	-.62**	-.62**	-.56*
Rewards for conventional involvement	-.86**	-.71**	-.71**	-.60*
Total school protection score	-.82**	-.73**	-.73**	-.63*
Family Protective Factors				
High attachment	.45	.32	.27	.27
Opportunities for positive involvement	.41	.27	.25	.25
Rewards for positive involvement	.41	.27	.26	.22
Total family protection factor	.43	.29	.26	.25
Individual Protective Factors				
High social skills	-.71**	-.38	-.80**	-.82**
Belief in the moral order	-.73**	-.36	-.84**	-.88**
Total individual protection score	-.74**	-.38	-.85**	-.88**
Total overall protection score	.20	.14	-.02	-.03

* $p < .05$

** $p < .01$

The patterns of associations between protective factors and monthly ATOD use were somewhat similar to those between protective factors and lifetime ATOD use. Service areas with lower alcohol use tended to have higher levels of rewards at school for involvement in conventional activities as well as higher levels of youth with good social skills and strong moral beliefs. Several inconsistencies were noted in the associations between past month ATOD use and protective factors. For instance, community protective factors and high family attachment did not operate in the expected direction. That is, service areas with high alcohol use also had high reported opportunities for community involvement and high family attachment. This relationship could be an artifact of the lower prevalence of past month use (compared to lifetime use) or it could be relate to the changes in error variance that occur when individual-level data are aggregated (i.e., summed to the service area level). School and individual protective factors also showed important relationships with tobacco, marijuana and illicit drug use. Service areas with more rewards for involvement in school activities had lower levels of tobacco and marijuana use, and service areas with higher reports of youth with social skills and strong moral beliefs (related to marijuana use only) generally had lower levels of marijuana and other illicit drug use.

Table 2.7 Associations Between Community, School, Family, Peer, and Individual Protective Factors and Past Month Substance Use (*N* = 17)

Protective Factor	Past Month Substance Use			
	Alcohol	Tobacco	Marijuana	Any Illicit Drug Use
Community Protective Factors				
Opportunities for conventional involvement	.54*	.39	.16	-.07
Rewards for community involvement	.34	.29	-.14	-.29
Total community protection score	.50*	.37	.07	-.14
School Protective Factors				
Opportunities for positive involvement	-.45	-.42	-.36	-.36
Rewards for conventional involvement	-.71**	-.62**	-.48*	-.28
Total school protection score	-.66**	-.59*	-.47	-.33
Family Protective Factors				
High attachment	.49*	.27	.22	.07
Opportunities for positive involvement	.43	.23	.23	.07
Rewards for positive involvement	.42	.23	.20	.03
Total family protection score	.45	.25	.22	.06
Individual Protective Factors				
High social skills	-.58*	-.20	-.73**	-.60*
Belief in the moral order	-.66**	-.18	-.67**	-.47
Total individual protection score	-.64**	-.20	-.72**	-.54*
Total protection score	.29	.20	-.02	-.16

* $p < .05$

** $p < .01$

Social indicators did not correlate with substance use outcomes in the expected direction. Rather, indicators such as poverty, low achievement scores, and teen birth rate were associated with lower rates of ATOD use (see Table 2.8). However, as shown in Table 2.9, several of the social indicators, including juvenile arrest rates, population density, test scores, teen birth rate, and STD/HIV/AIDS rate were correlated in the expected direction such that high levels of these social indicators were associated with high levels of a composite measure of any past month drug use, antisocial behavior, and gang involvement.

Table 2.8 Associations Between Social Indicators and Lifetime Alcohol, Tobacco, and Marijuana Use (*N* = 17)

Social Indicators	Alcohol Use	Tobacco Use	Marijuana Use	Any Illicit Drug Use
Juvenile arrests for alcohol	-.10	-.22	-.22	-.26
Juvenile arrests for drugs	.02	-.42	.28	.22
Juvenile treatment admissions – alcohol & drug	-.14	-.10	-.11	-.16
Divorce	-.37	.16	-.56*	-.52*
Juvenile arrests for violent crime	-.30	-.47	.06	-.01
Juvenile arrests for property crime	-.01	-.25	.20	.12
Juvenile arrests for non-ATOD crime	.09	-.23	.23	.19
Population density	.01	-.34	.31	.26
Percent total population living in poverty	-.61*	-.07	-.64**	-.66**
Percent children living in poverty	-.66**	-.15	-.61**	-.61**
Retail outlet density	-.36	.04	-.50*	-.50*
Average scores below standardized achievement tests	-.54*	-.15	-.50*	-.45
Birth rate for 10- to 17-year-olds	-.63**	-.22	-.46	-.48*
STD/HIV/AIDS rate	-.25	-.40	.09	.02

* $p < .05$

** $p < .01$

Table 2.9 Association Between Social Indicators and Antisocial Behavior and Gang Involvement (*N* = 17)

Social Indicators	Any Substance Use	Antisocial Behavior	Gang Involvement
Juvenile arrests for alcohol	-.19	-.30	-.16
Juvenile arrests for drugs	.66**	.41	-.13
Juvenile treatment admissions – alcohol & drug	-.04	.27	.03
Divorce	-.65**	-.34	.09
Juvenile arrests for violent crime	.61**	.63**	.20
Juvenile arrests for property crime	.47	.33	0.0
Juvenile arrests for non-ATOD crime	.34	.28	-.05
Population density	.91**	.56*	.10
Percent total population living in poverty	-.42	-.04	.39
Percent children living in poverty	-.31	.12	.47
Retail outlet density	-.34	-.36	.17
Average scores below standardized achievement tests	-.18	.36	.68**
Birth rate for 10- to 17-year-olds	-.10	.25	.63**
STD/HIV/AIDS rate	.67**	.54*	.25

* $p < .05$

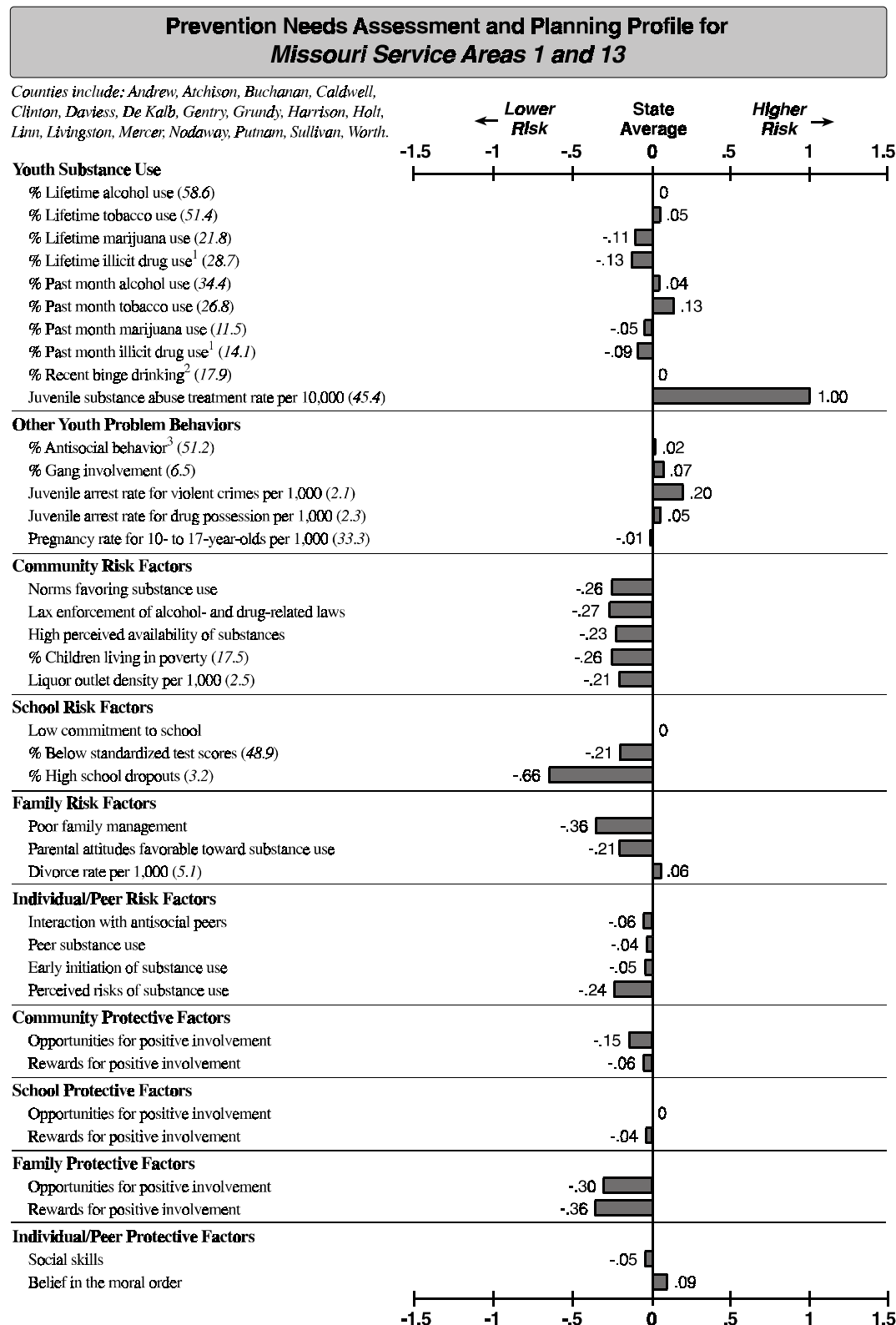
** $p < .01$

2.4 Service Area Profiles

To provide a summary of prevention-related information, profiles of each of the 17 service areas (3 collapsed) were created (see Figures 2.2 to 2.18). These profiles display aggregated service area scores for factors relating to youth substance use and abuse; youth problem behaviors; community, school, family, and peer/individual risk and protective factors. Variables used in the profiles include social indicators as well as data collected from the student survey. These profiles provide prevention planners with an easy-to-read resource for assessing how each service area ranks compared to the State average on a number of important risk and health promotion variables. Data are presented in two ways: (1) the actual value (typically a rate, percentage, or mean) is provided to the left after the name of the construct, and (2) a standardized value is plotted to facilitate easy comparison across the indicators and between the service area and State average. For each construct, scores were standardized by subtracting the mean value across all service areas from the value of the specified service area and then dividing by its standard deviation. This procedure produces factors with a mean of 0 and a standard deviation of 1, regardless of the original unit of measurement. Thus, each standardized measure represents the number of standard deviation units a service area value is from the State average (which is 0). By defining the factors this way, each measure implicitly provides a comparison

between the service area and the State average. In addition, because all of the standardized variables are shown on the same scale, comparison across the variables to identify those that are unusually high or low is facilitated. One issue to consider is that aggregating communities and counties up to the service area level results in some regression to the mean; thus, there is less variability across service areas than would be expected if the focus were on smaller geographic levels.

Figure 2.2



¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

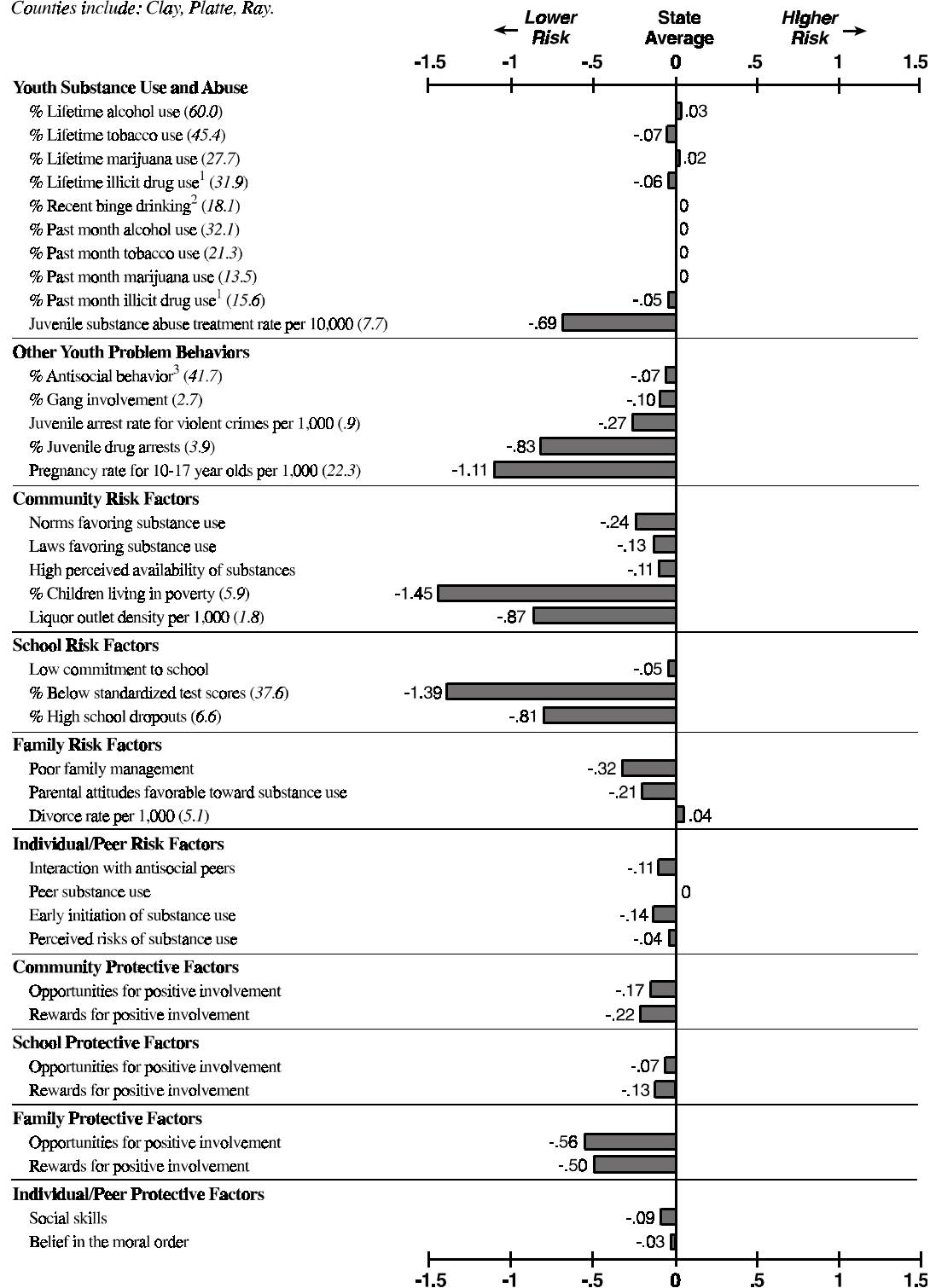
² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.3

**Prevention Needs Assessment and Planning Profile for
Missouri Service Area 6**

Counties include: Clay, Platte, Ray.



¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

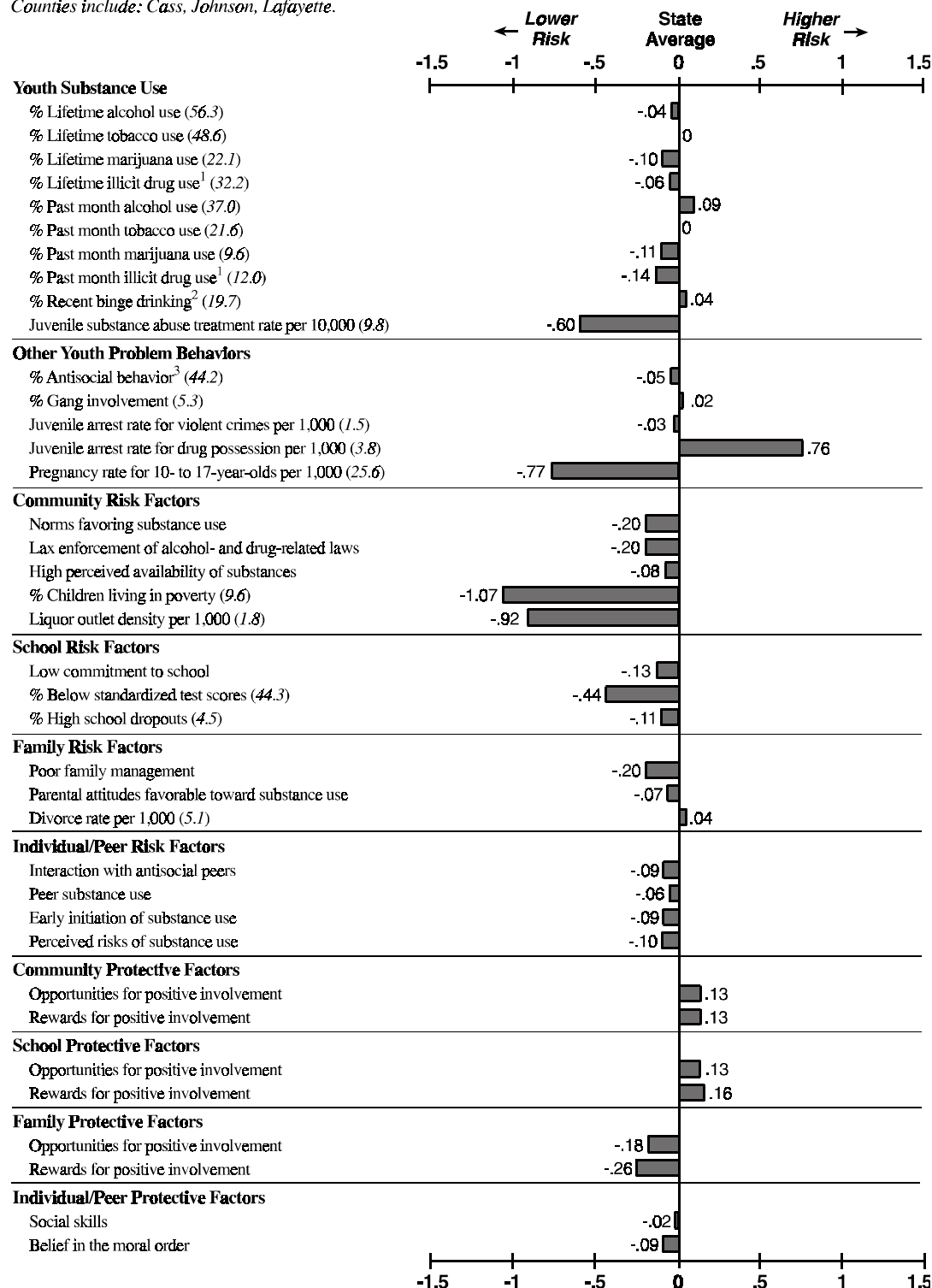
² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.4

**Prevention Needs Assessment and Planning Profile for
Missouri Service Area 7**

Counties include: Cass, Johnson, Lafayette.

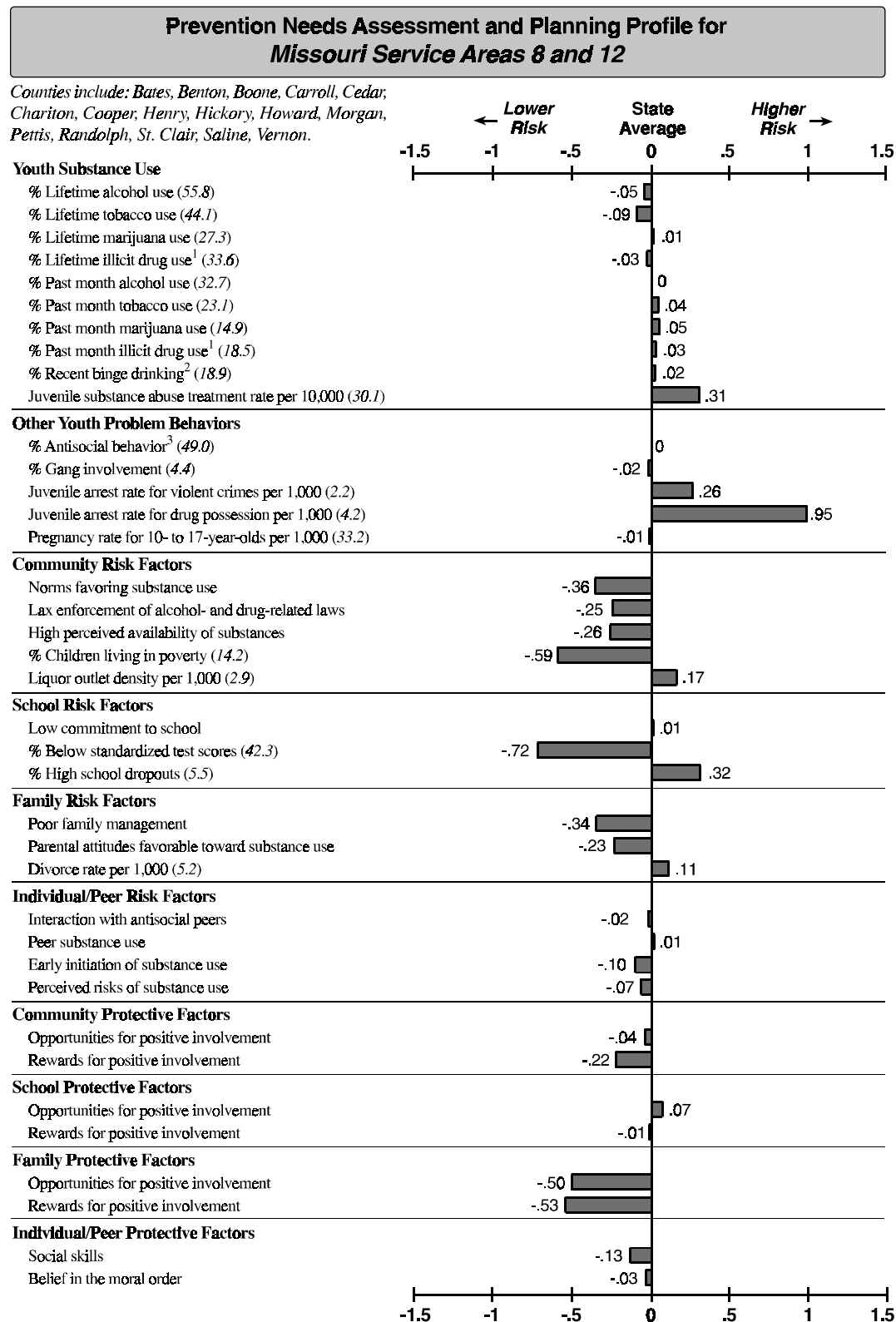


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.5

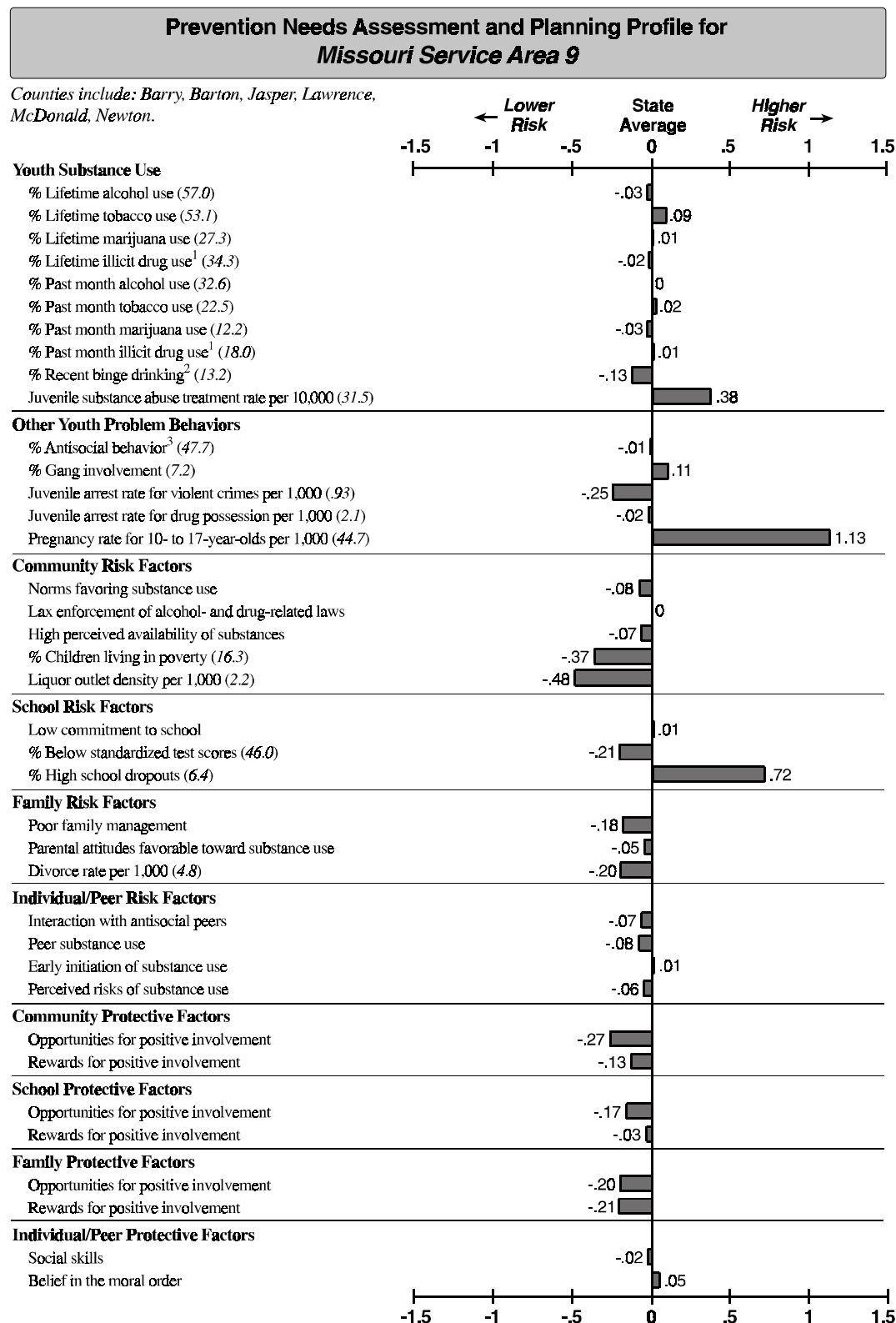


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.6

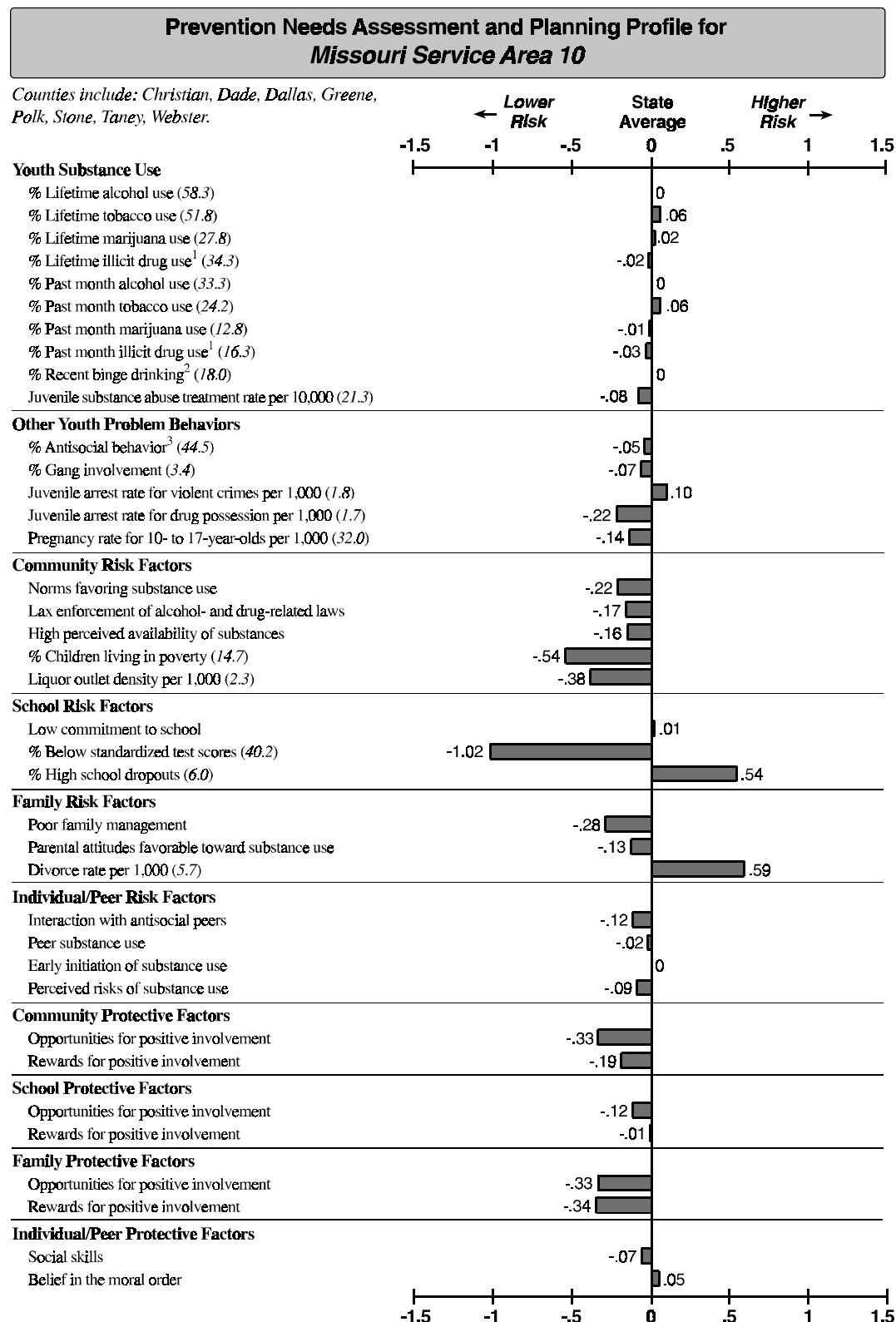


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.7

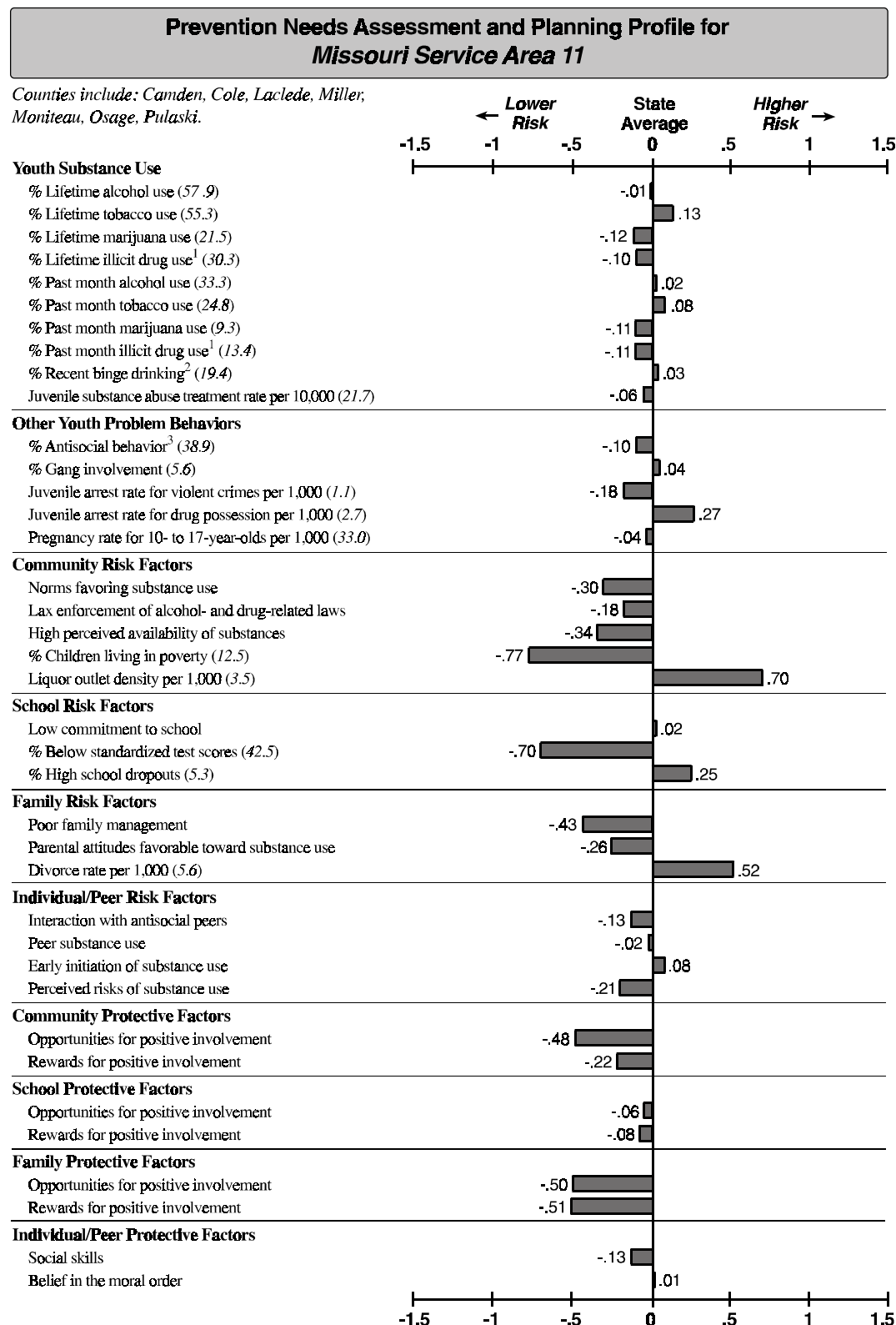


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.8

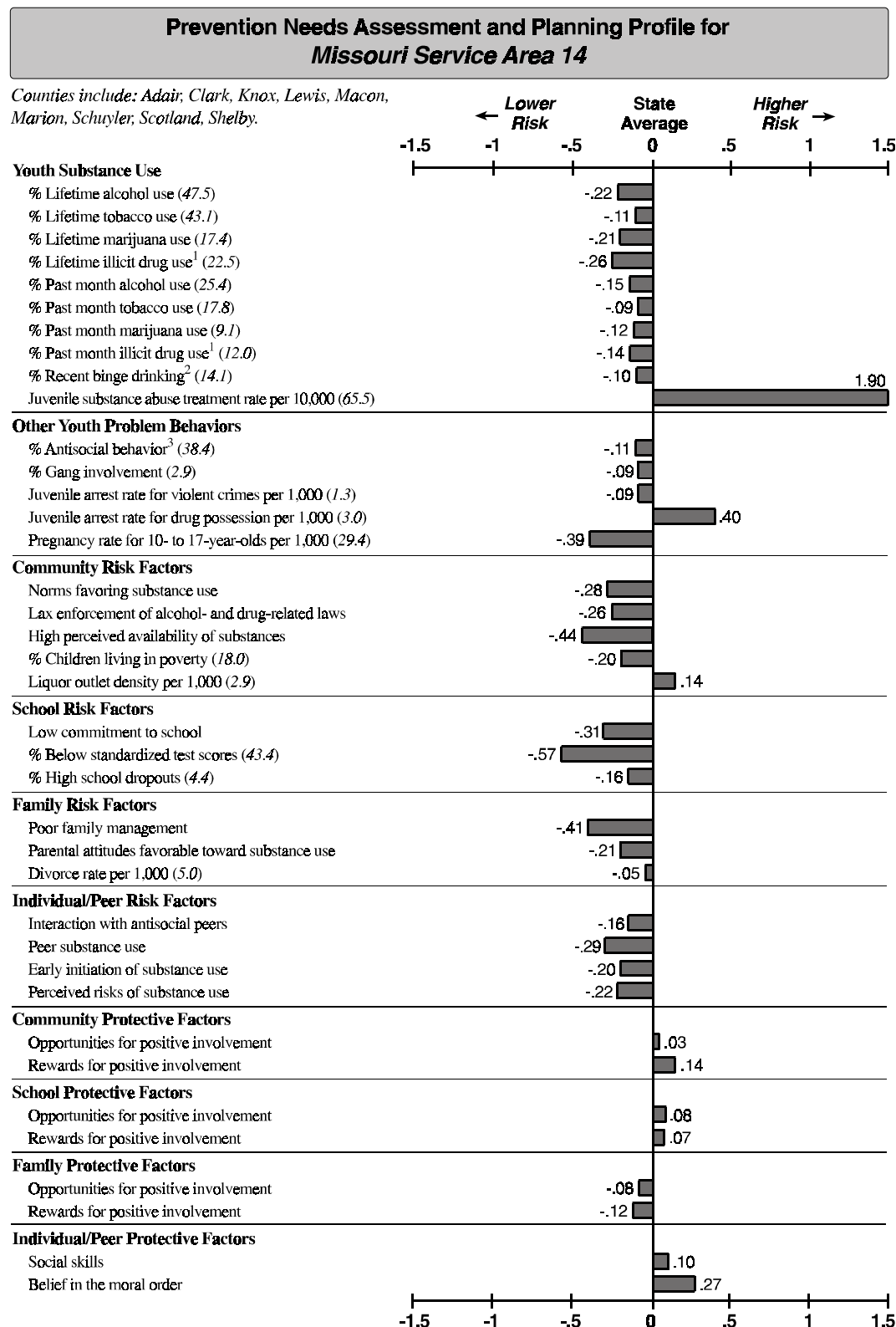


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.9

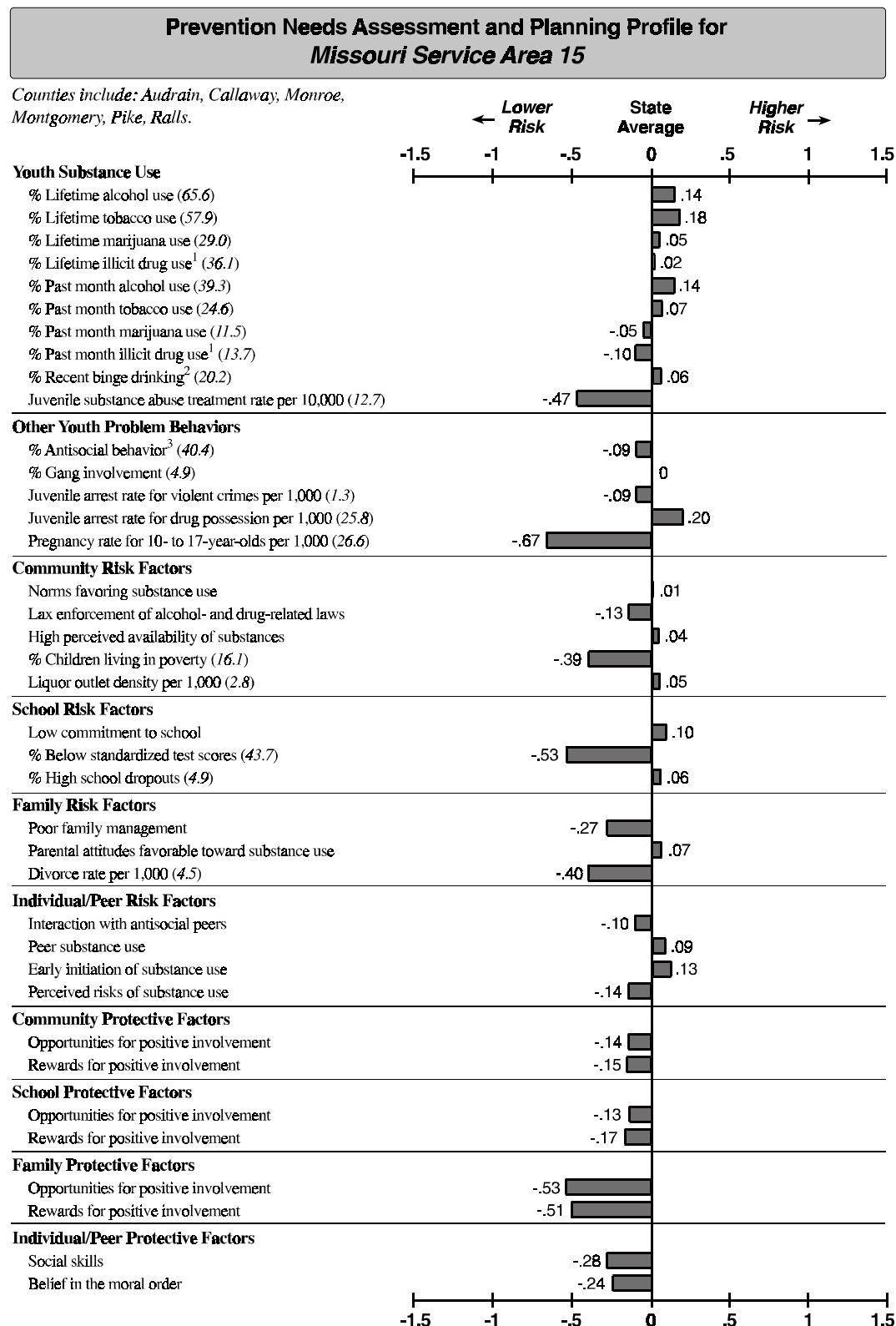


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.10

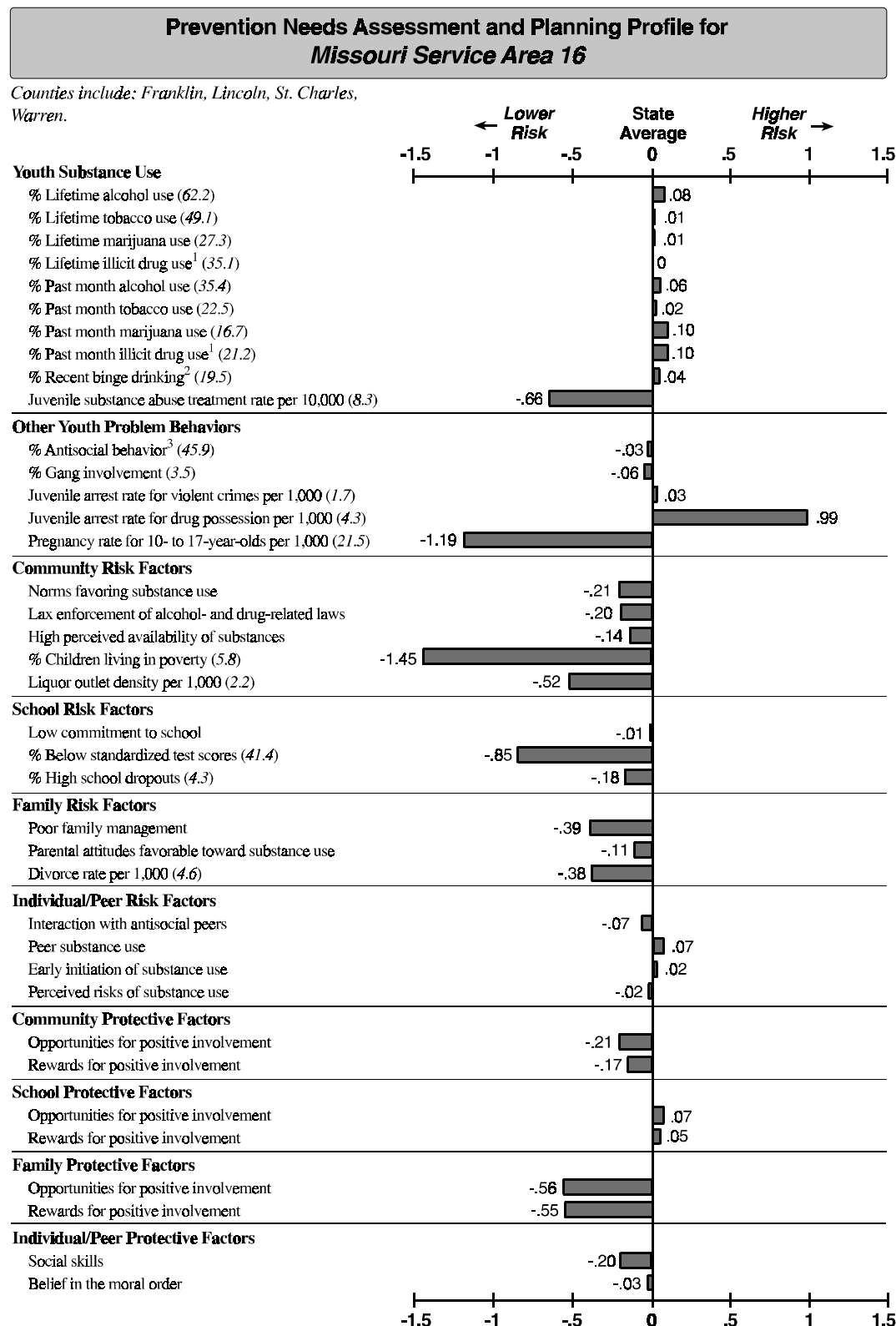


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.11

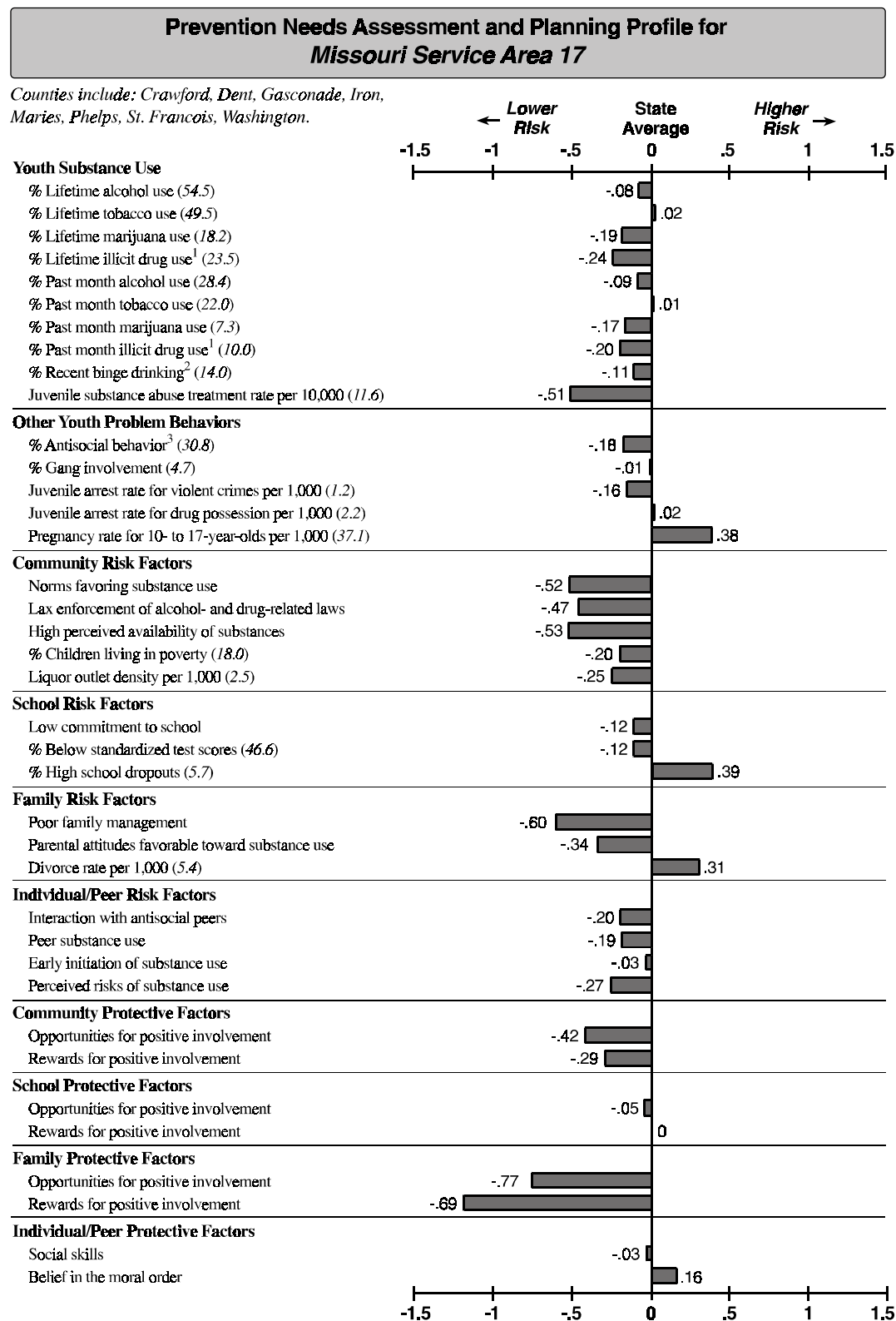


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.12

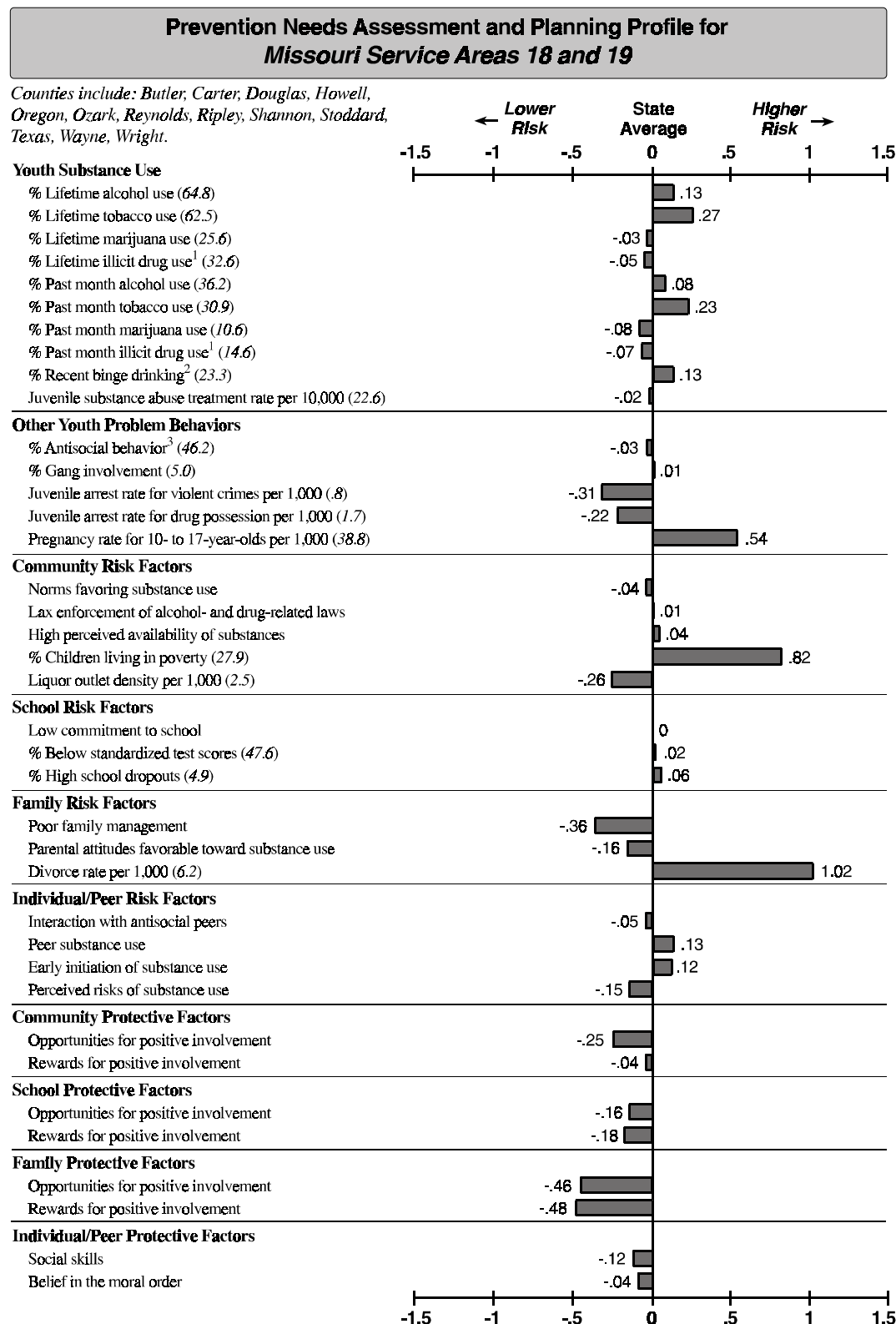


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.13

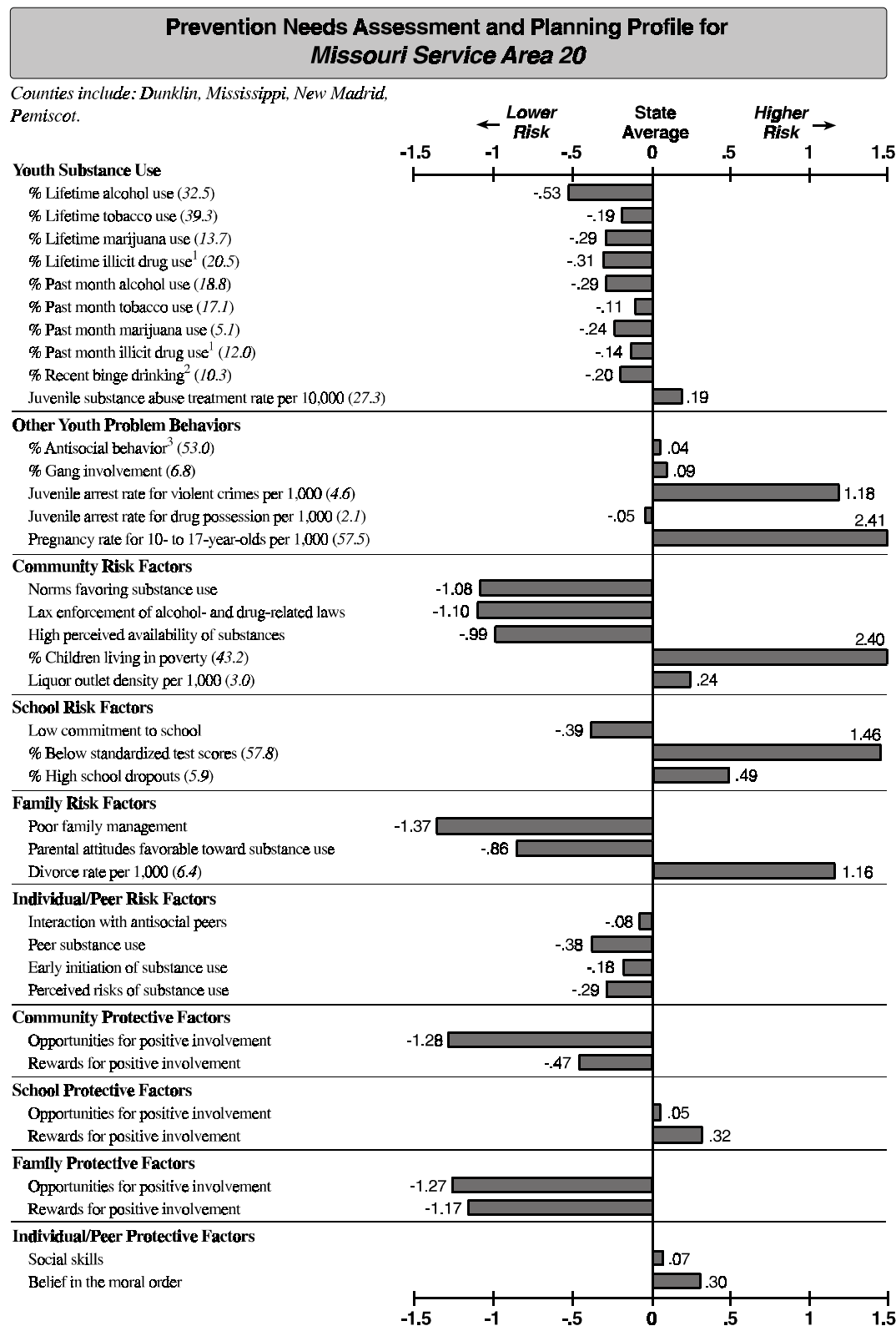


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.14

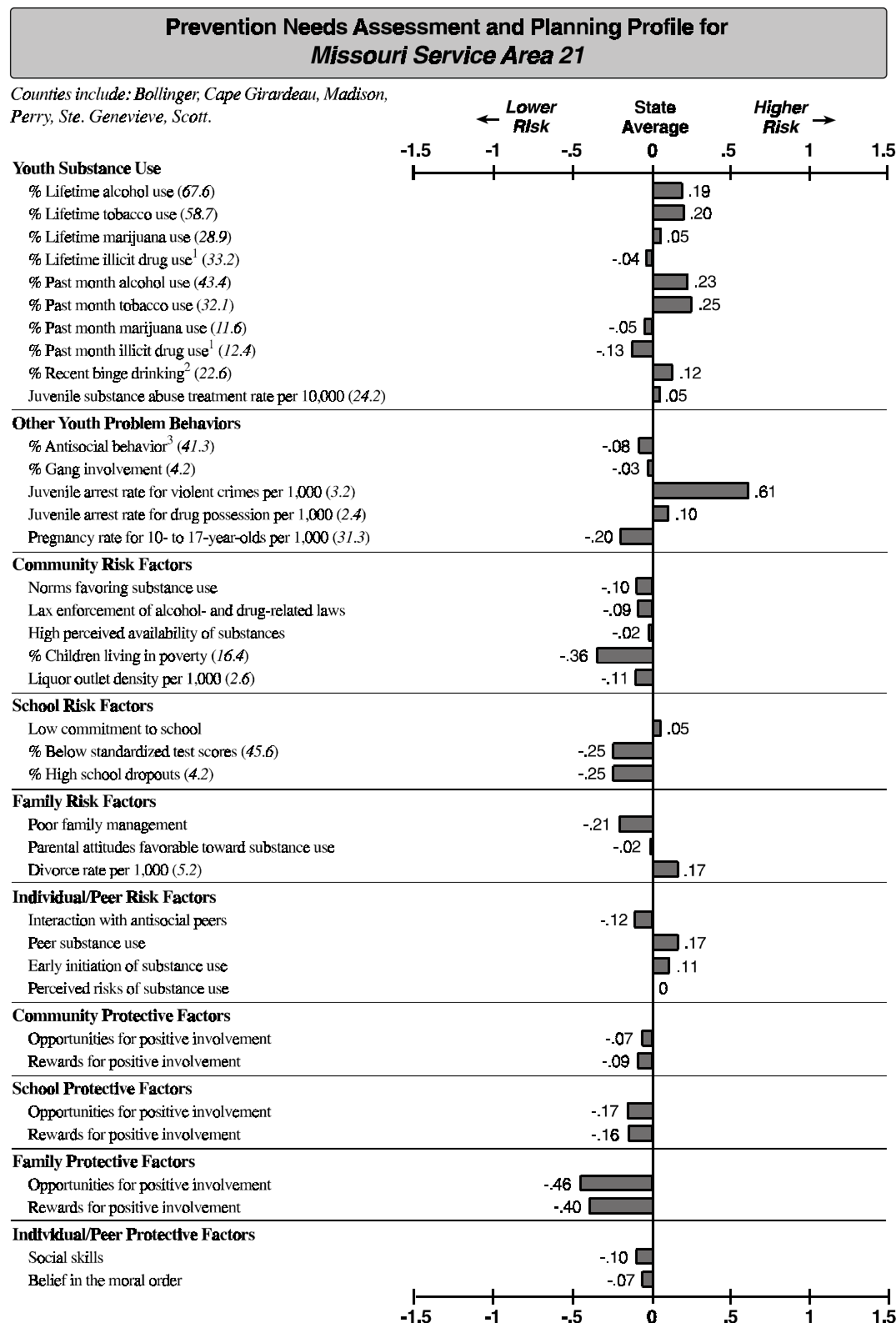


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.15

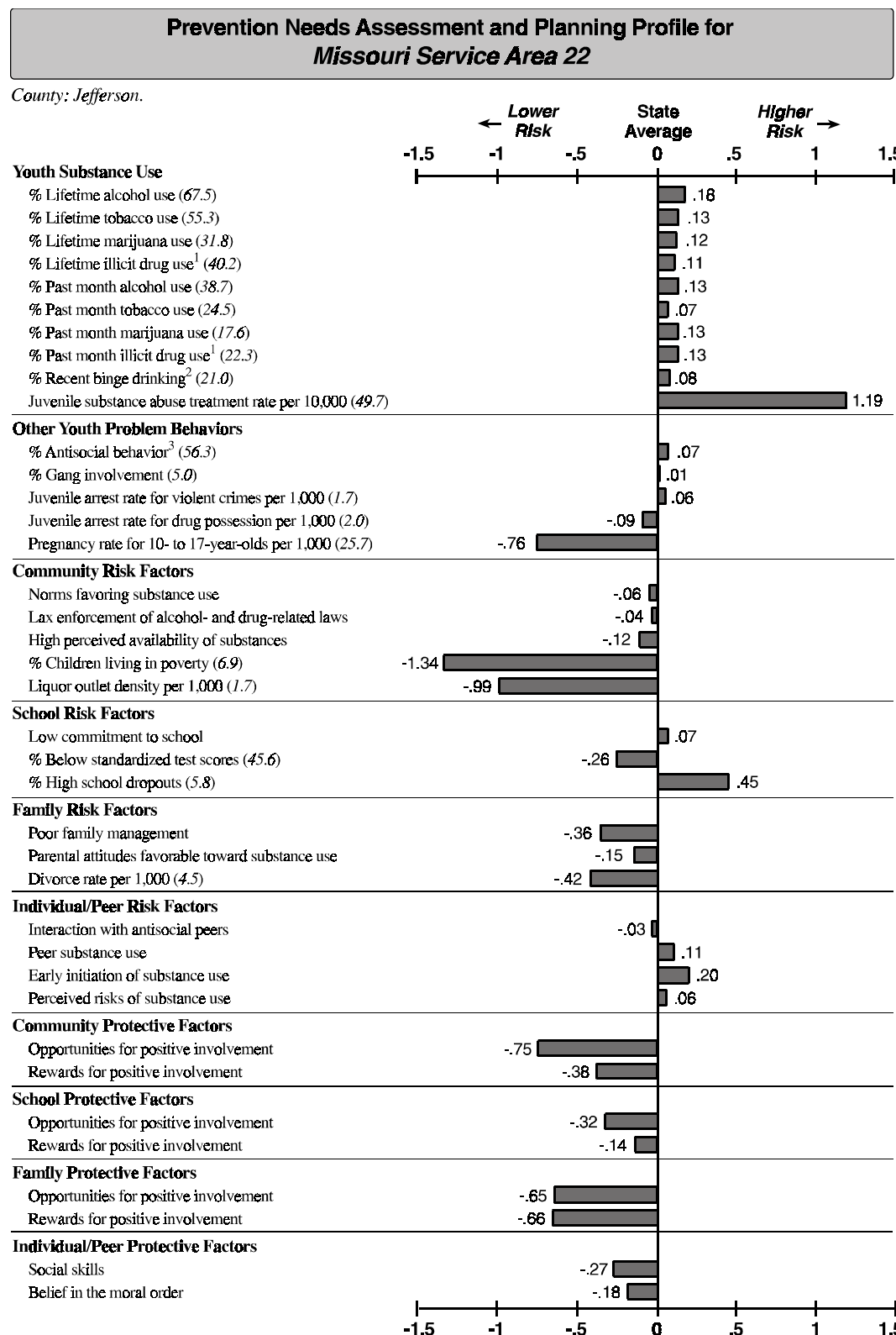


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.16

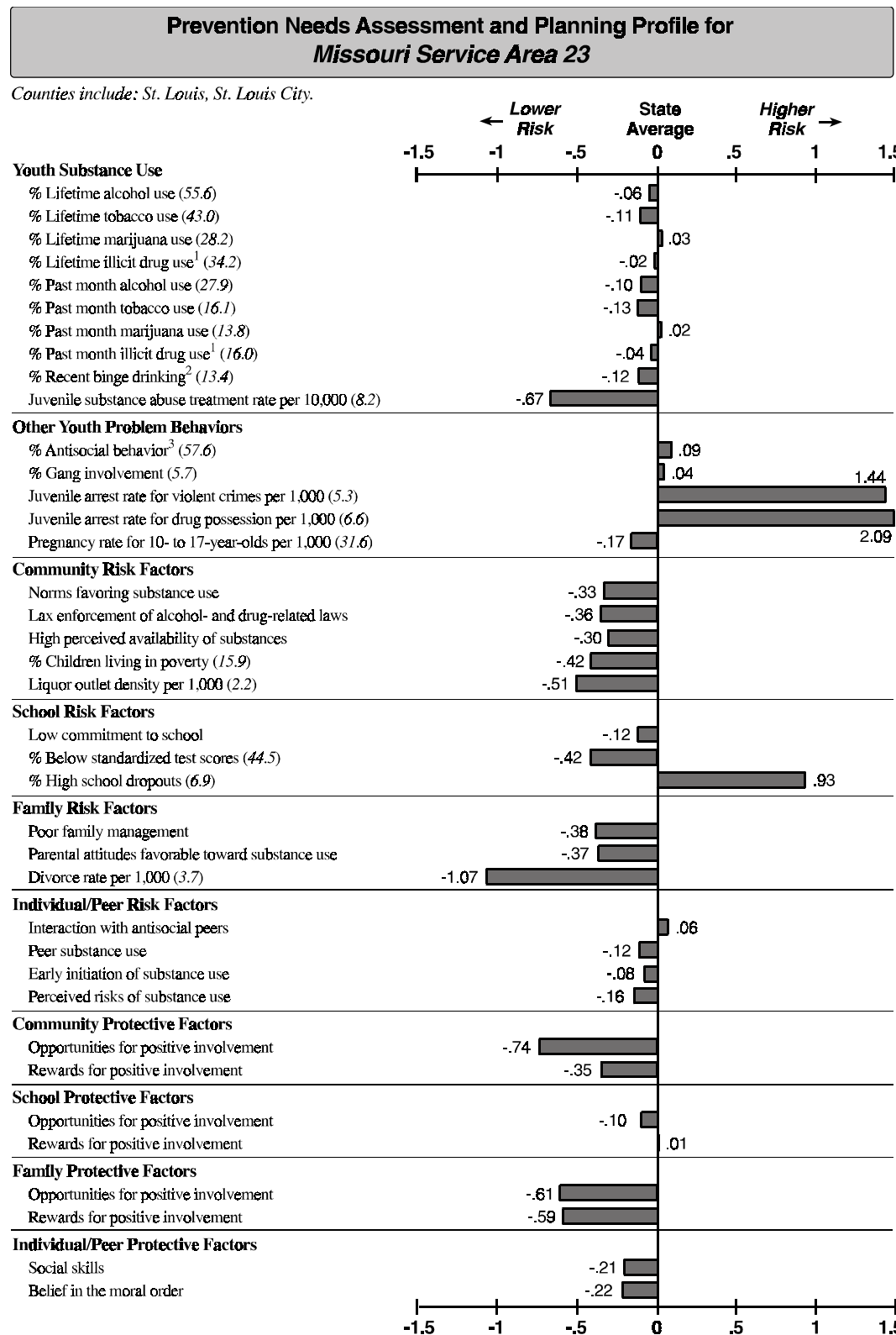


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.17

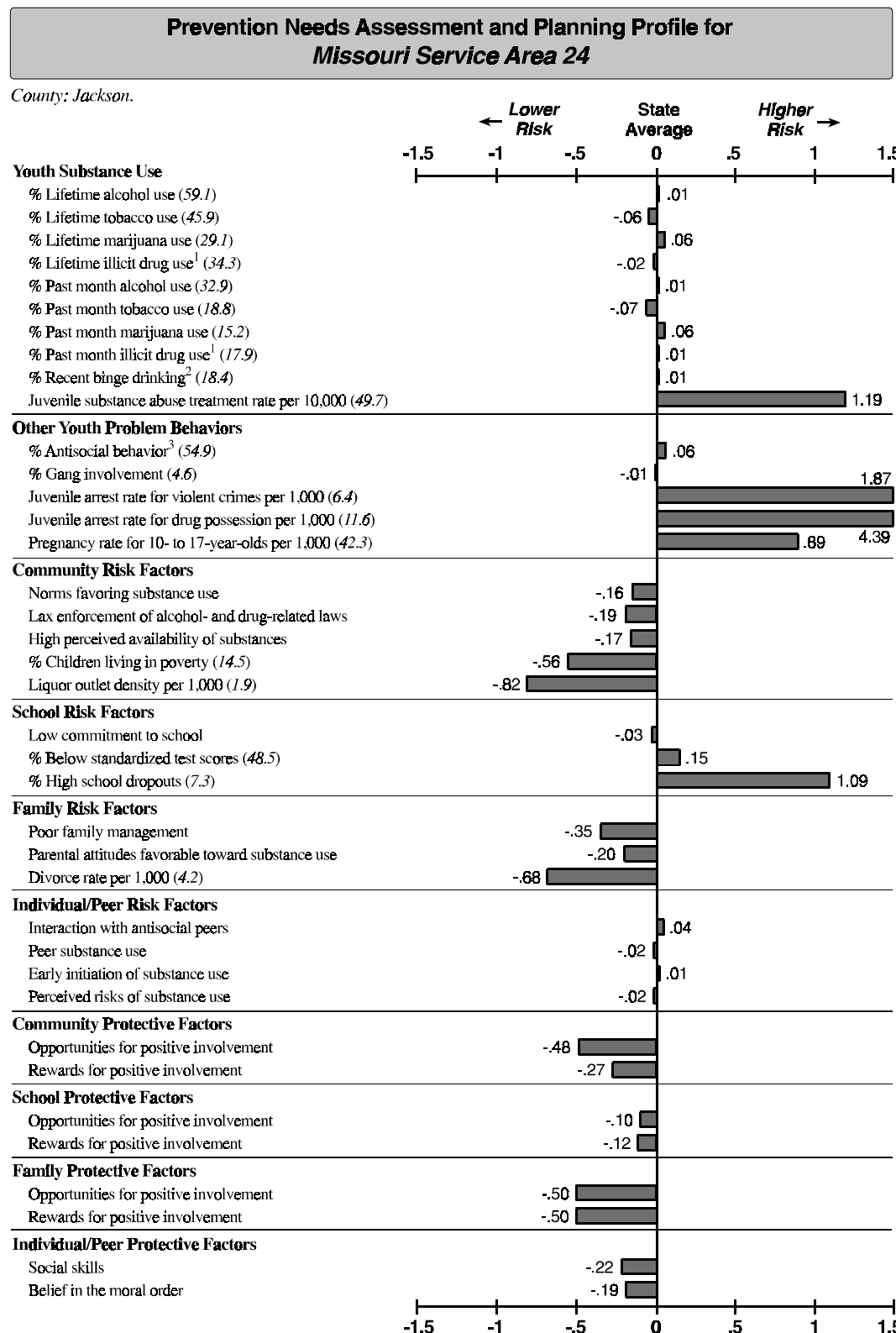


¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors; suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

Figure 2.18



¹ Illicit drug use refers to the use of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including LSD and PCP), speed, heroin, or other illegal drugs.

² Recent binge drinking is defined as having five or more drinks at the same time or within a couple of hours of each other at least once in the last two weeks.

³ Antisocial behavior refers to engaging in at least one of the following behaviors: suspended from school, carried a handgun, sold illegal drugs, stole or tried to steal a motor vehicle such as a car or motorcycle, been arrested, attacked someone with the idea of seriously hurting them, been drunk or high at school, or taken a handgun to school.

2.5 Service Area Maps

State maps with service areas shaded to represent their ranking on prevention-related factors are provided in this section. Quartile (top 25%, second from top 25%, second from bottom 25%, and bottom 25%) scores were created to indicate service areas' relative scores for prevention factors. Single construct geographic comparisons are displayed using the prevention constructs with the strongest association to the outcomes or those deemed by the Division of Alcohol and Drug Abuse to be a priority based on the strategic plan. First, we present maps focused solely on substance use measures, including use of any substance, alcohol, binge drinking, tobacco, marijuana, and illicit drug use (see Figures 2.19 to 2.25). Antisocial behavior and gang involvement are displayed in Figures 2.26 and 2.27. The next set of maps depicts community-level risk and protective factors. We selected the variables with the highest correlation to drug use that are also changeable via intervention strategies to map, including laws related to substance use, perceived availability of use, and the total risk and protection score. School commitment was the only school risk factor correlated with substance use, and it is displayed in Figure 2.32. The total school risk and protection scores are mapped in Figures 2.33 and 2.34. Parental monitoring, an important correlate of youth substance use, is displayed in Figure 2.35, and Figures 2.36 and 2.37 provide illustrations of the total family risk and protection scores. Several individual-level risk factors with important consequences for youth substance use are mapped in Figures 2.38 through 2.42, including early initiation of use, perceived harm, and attitudes toward use, as well as the total individual risk and protection scores. All the risk constructs were averaged to create a total risk score for each service area, which is presented in Figure 2.43. Several social indicators are presented in Figures 2.44 through 2.48. Despite their low correlations with individual measures of substance use, several were related to a composite indicator of substance use as well as indicators of antisocial behavior and gang involvement.

Finally, we integrated several risk factors in Figures 2.49 through 2.54 as a way to display risk profiles for specific drugs when the top five correlates of drug use are combined into an integrative measure of risk. The integrated maps use a procedure called map algebra, which creates a summative risk index to distinguish service areas with particularly high levels of multiple types of risk factors. Map algebra or cartographic modeling applications use mathematical methods to combine information from a series of maps by scaling (or ranking) the values of each original map and then summing them to produce a final integrated score used to predict an outcome. This method has been shown effective in modeling geographic risk based on demographic and socioeconomic variables (Hanchette, 1999). Cartographic modeling is especially critical in identifying service areas with the highest risk based on the aggregation of multiple factors important for predicting prevention needs. This method capitalizes on the

integrated data analytic capabilities of GIS and allows planners to view combinations of factors rather than view prevention-related constructs in isolation from one another.

Tables 2.10 through 2.12 summarize information displayed in the maps. The tables indicate the degree to which service areas are consistently ranked as high versus low risk. (Please see Figure 2.1 to determine which counties fall in which service areas.) Service areas are more consistent in ranks when comparing alcohol and tobacco as opposed to marijuana and illicit drug use. In several instances, service areas that were ranked as low for alcohol or tobacco use were ranked as high for illicit drug use. Thus, service area characteristics may have different implications for licit versus illicit drug use. There was more consistency in ranks when comparing risk measures (see Table 2.11). Community and family risk quartiles were fairly consistent across the service areas, whereas there was more variability for the school risk. Finally, as shown in Table 2.12, service areas were fairly consistent on ranking when integrated risk factors were used.

Table 2.10 Summary of Where Service Areas Fall on Measures of Past Month Substance Use

Service Area (SA)	Alcohol Use	Binge Drinking (past 2 weeks)	Tobacco Use	Marijuana Use	Any Illicit Drug Use
1 and 13	3	2	4	2	2
6	1	2	1	3	3
7	4	3	2	1	1
8 and 12	2	3	3	4	4
9	2	1	2	3	4
10	3	2	3	3	3
11	2	3	4	1	1
14	1	1	1	1	1
15	4	4	3	2	2
16	3	3	2	4	4
17	1	1	2	1	1
18 and 19	3	4	4	2	2
20	1	1	1	1	1
21	4	4	4	2	2
22	4	4	3	4	4
St. Louis (23)	1	1	1	3	3
Jackson County (24)	2	2	1	4	3

1 – 4: (1 = lowest risk; 4 = highest risk).

Risk values based on quartiles displayed in Figure 2.19 through Figure 2.24.

Table 2.11 Summary of Where Service Areas Fall on Risk Measures

Service Area (SA)	Community Risk	School Risk	Family Risk	Peer/Individual Risk	Overall Risk
1 and 13	2	4	2	1	2
6	2	1	2	2	2
7	4	1	4	3	3
8 and 12	1	2	1	2	1
9	4	3	4	2	4
10	4	3	3	2	3
11	1	4	1	3	2
14	2	1	2	1	1
15	3	3	4	4	3
16	2	2	3	3	3
17	1	1	1	1	1
18 and 19	4	2	3	4	4
20	1	1	1	1	1
21	3	4	4	4	4
22	3	4	3	4	4
St. Louis (23)	1	2	1	1	1
Jackson County (24)	3	3	2	3	2

1 – 4: (1 = lowest risk; 4 = highest risk).

Risk values based on quartiles displayed in Figures 2.30, 2.33, 2.36, 2.41, and 2.43.

Table 2.12 Summary of Where Service Areas Fall on Integrated Measures of Substance Use Risk

Service Area (SA)	Alcohol Use	Binge Drinking	Tobacco Use	Marijuana Use	Stimulant Use	Illicit Drug Use
1 and 13	2	1	1	1	1	1
6	3	3	2	3	2	3
7	2	3	2	2	2	2
8 and 12	2	2	2	3	2	2
9	3	3	3	3	2	3
10	2	2	3	3	3	2
11	1	2	3	3	3	2
14	1	1	1	1	1	1
15	4	4	4	4	4	4
16	3	3	3	4	3	3
17	1	1	1	1	1	1
18 and 19	4	4	4	3	4	4
20	1	1	1	1	1	1
21	4	4	4	4	4	4
22	4	4	4	4	4	4
St. Louis (23)	1	1	1	1	1	1
Jackson County (24)	3	2	2	3	3	3

1 – 4: (1 = lowest risk; 4 = highest risk).

Risk values based on quartiles displayed in Figures 2.49 to 2.54.

Figure 2.19

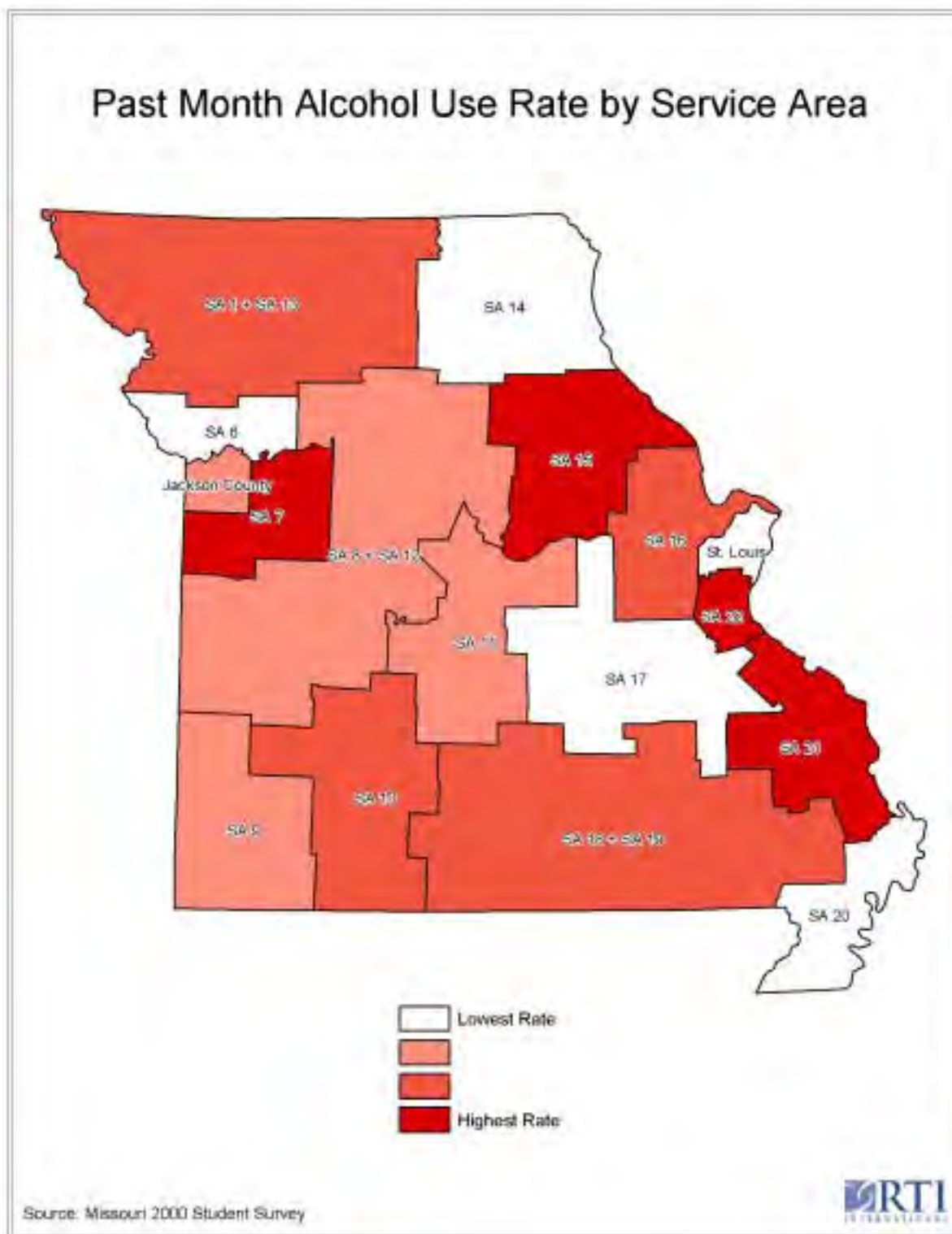


Figure 2.20

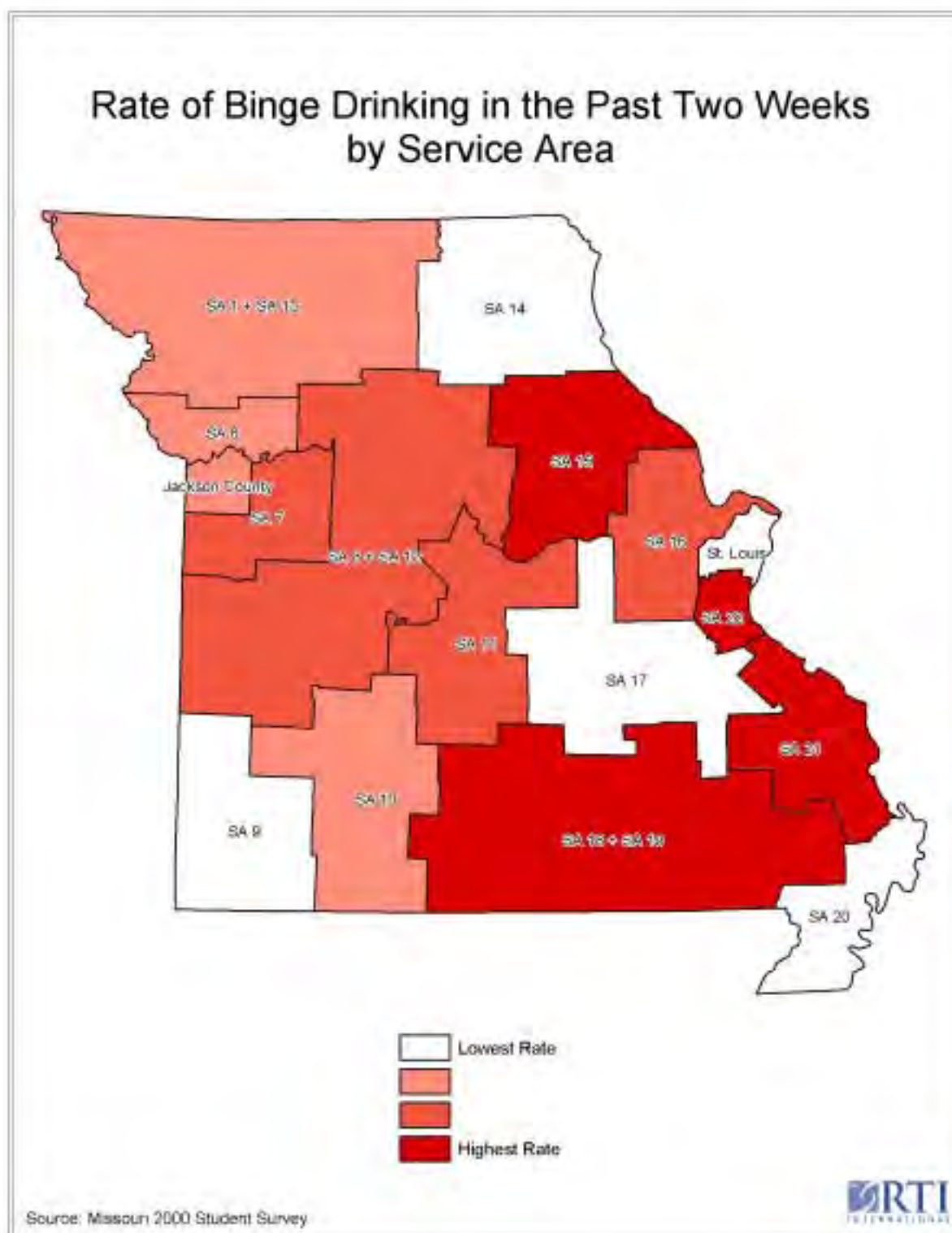


Figure 2.21

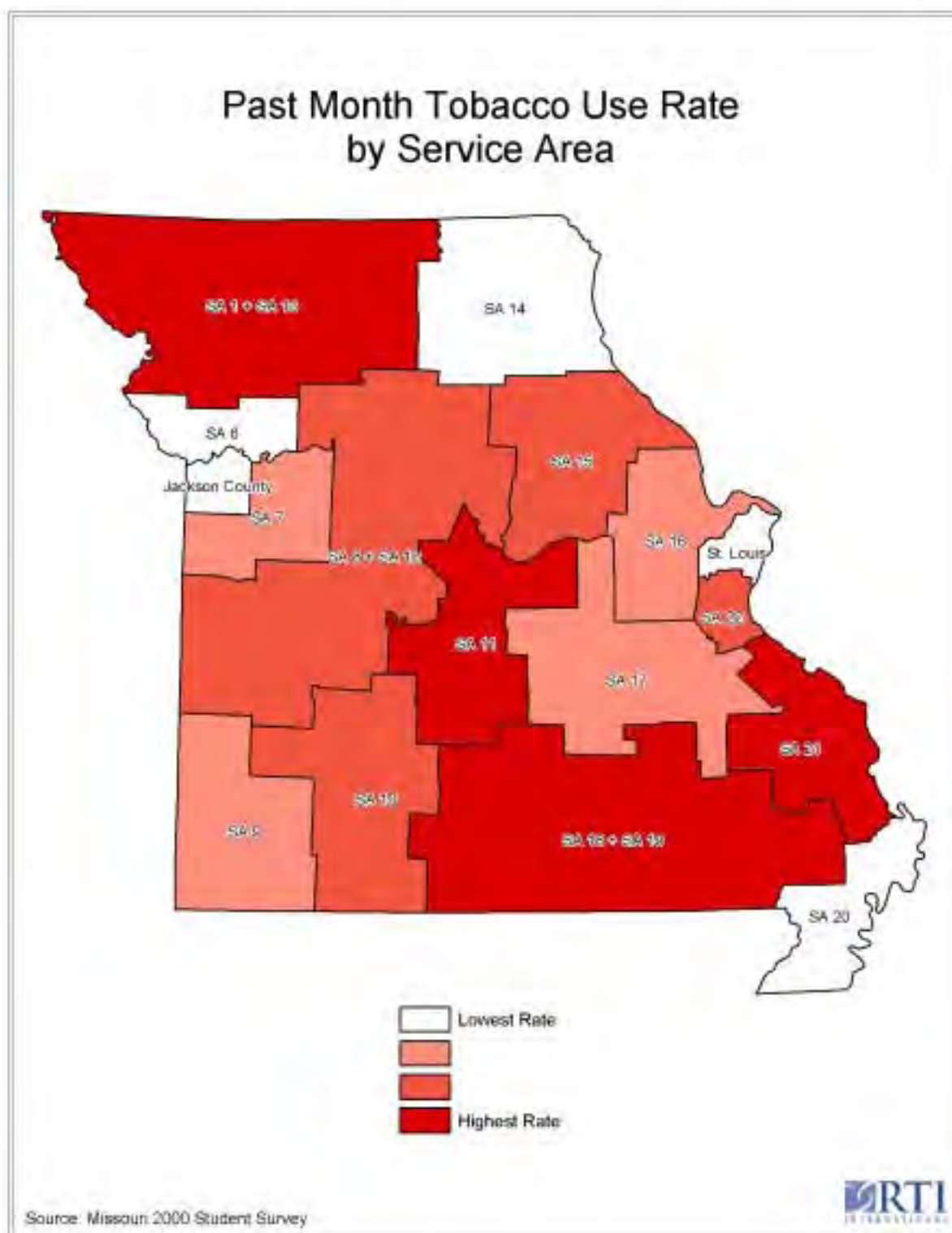


Figure 2.22

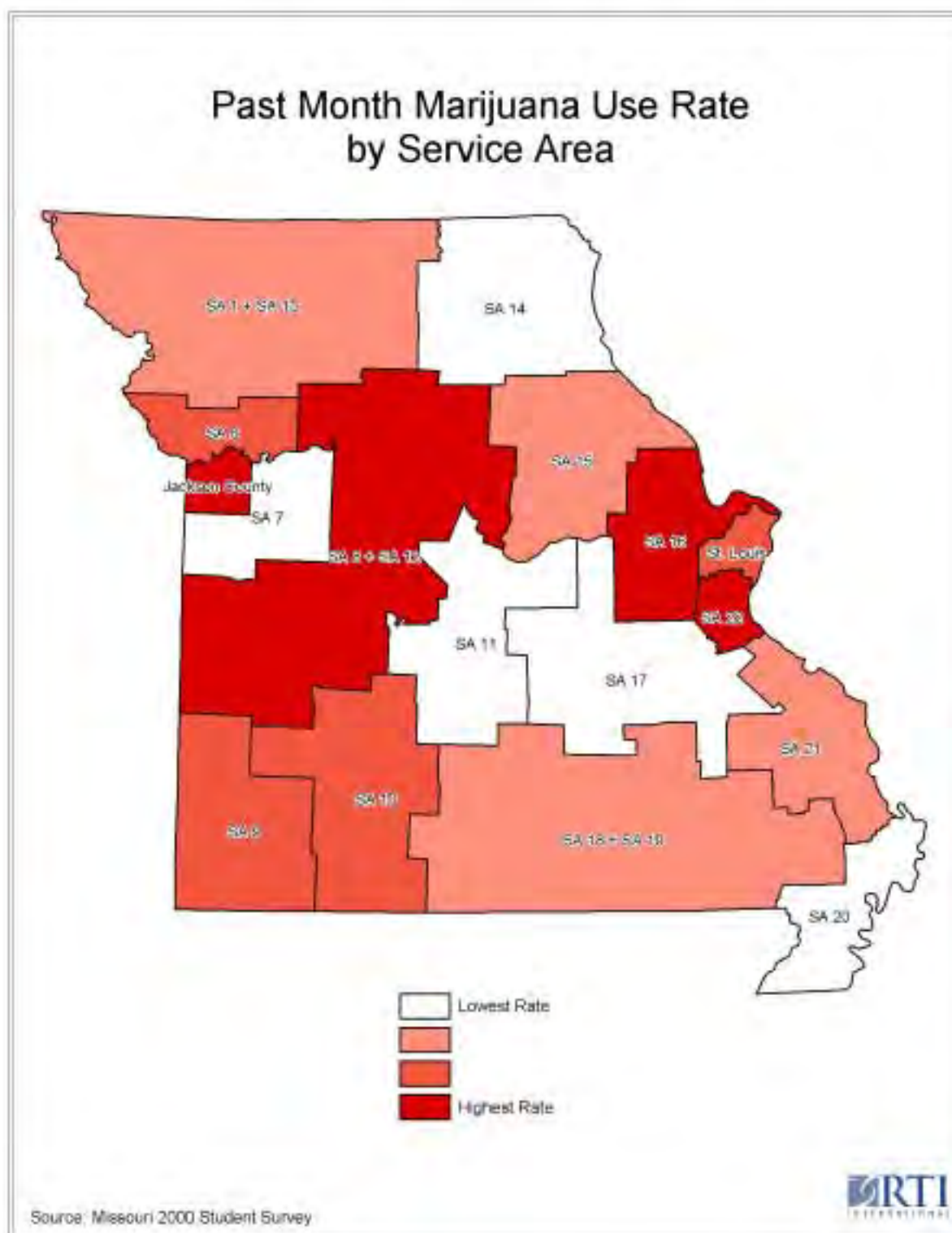


Figure 2.23

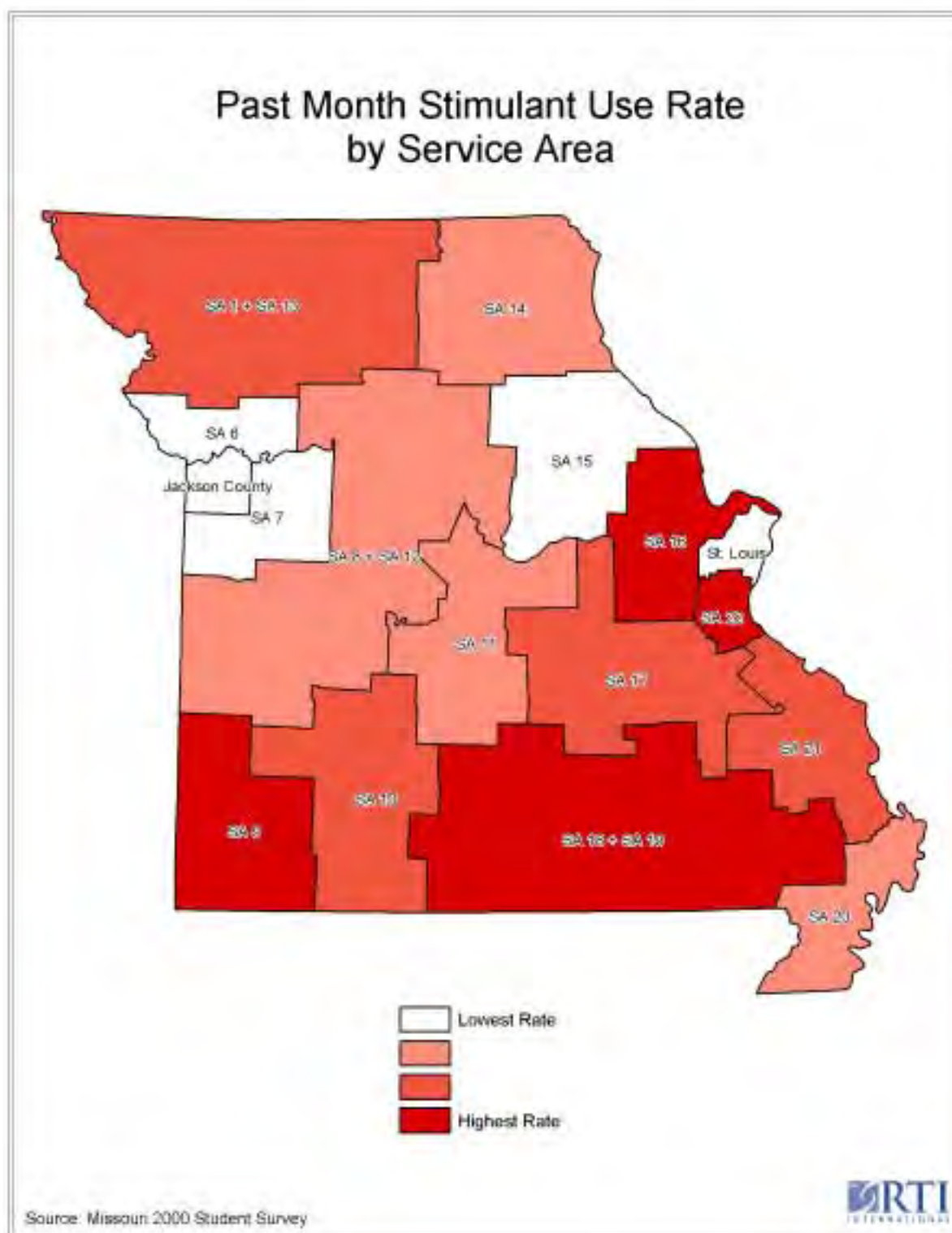


Figure 2.24

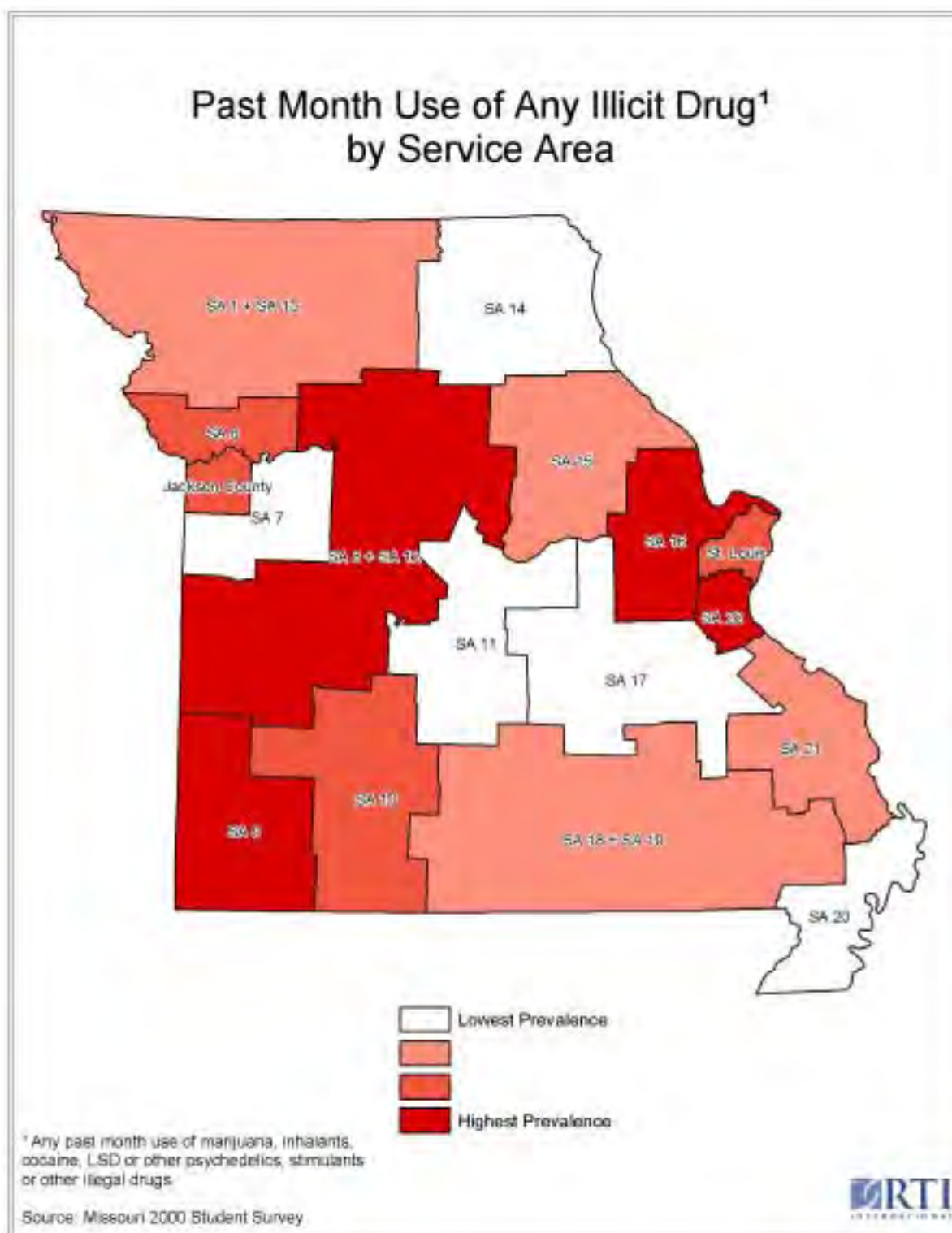


Figure 2.25

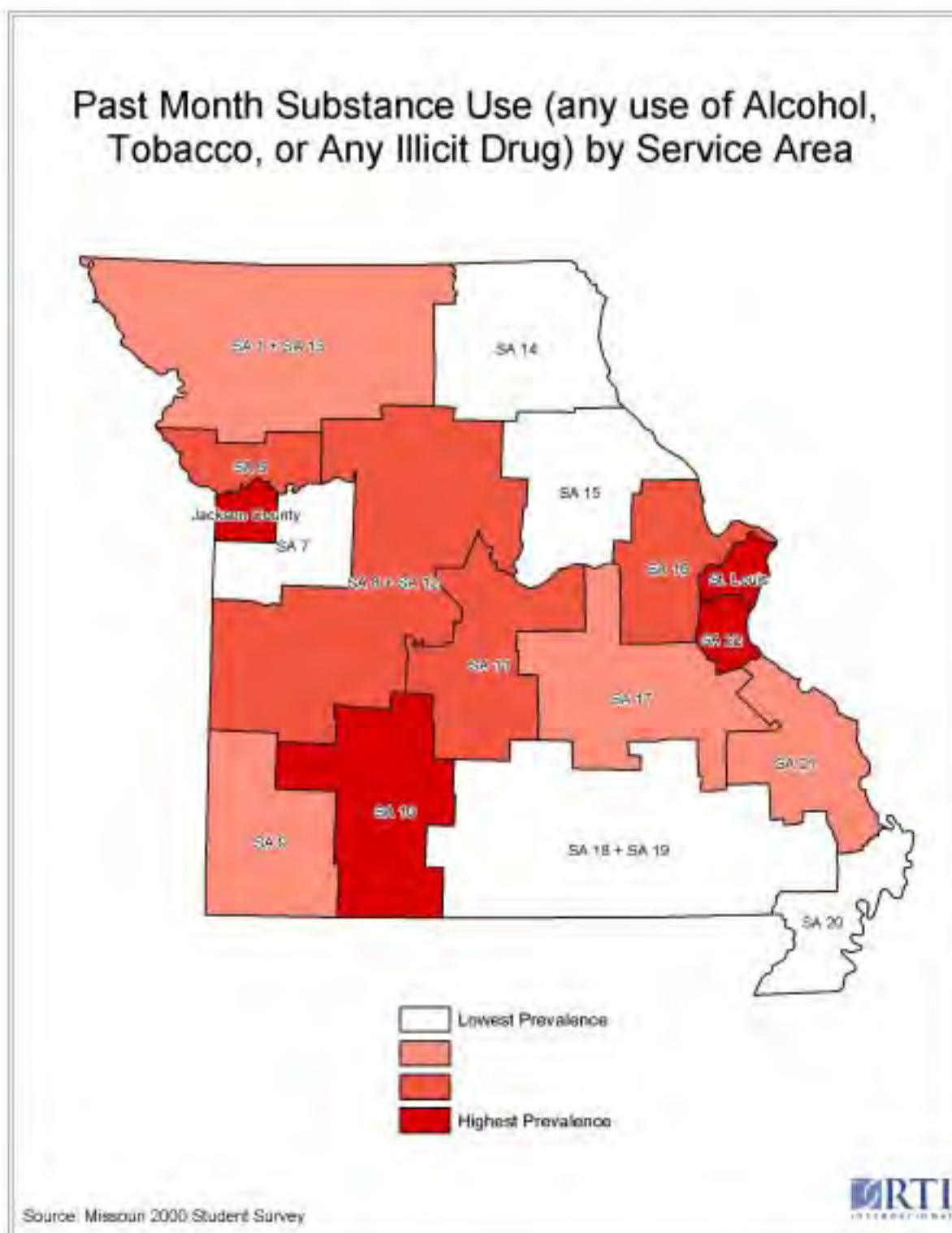


Figure 2.26

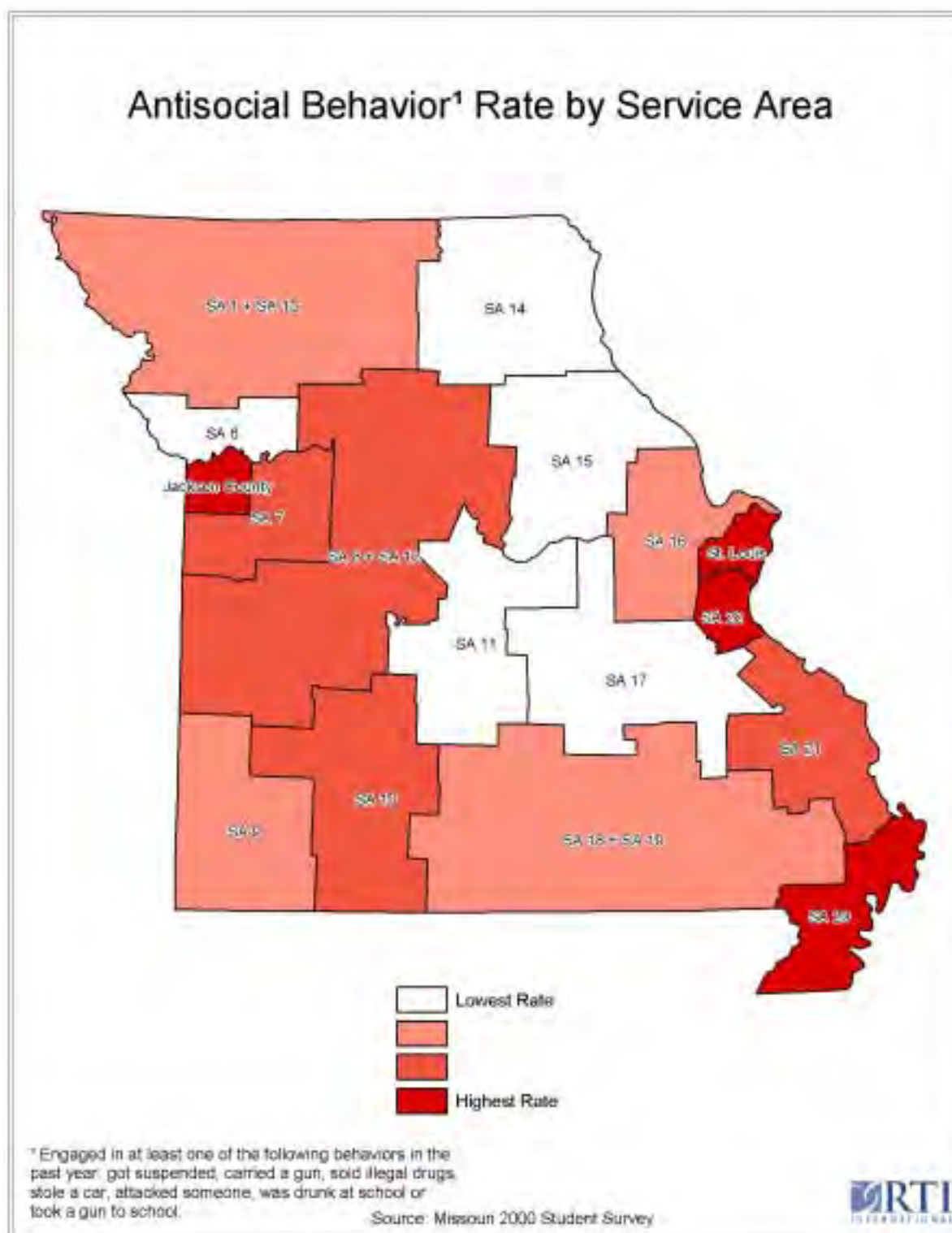


Figure 2.27

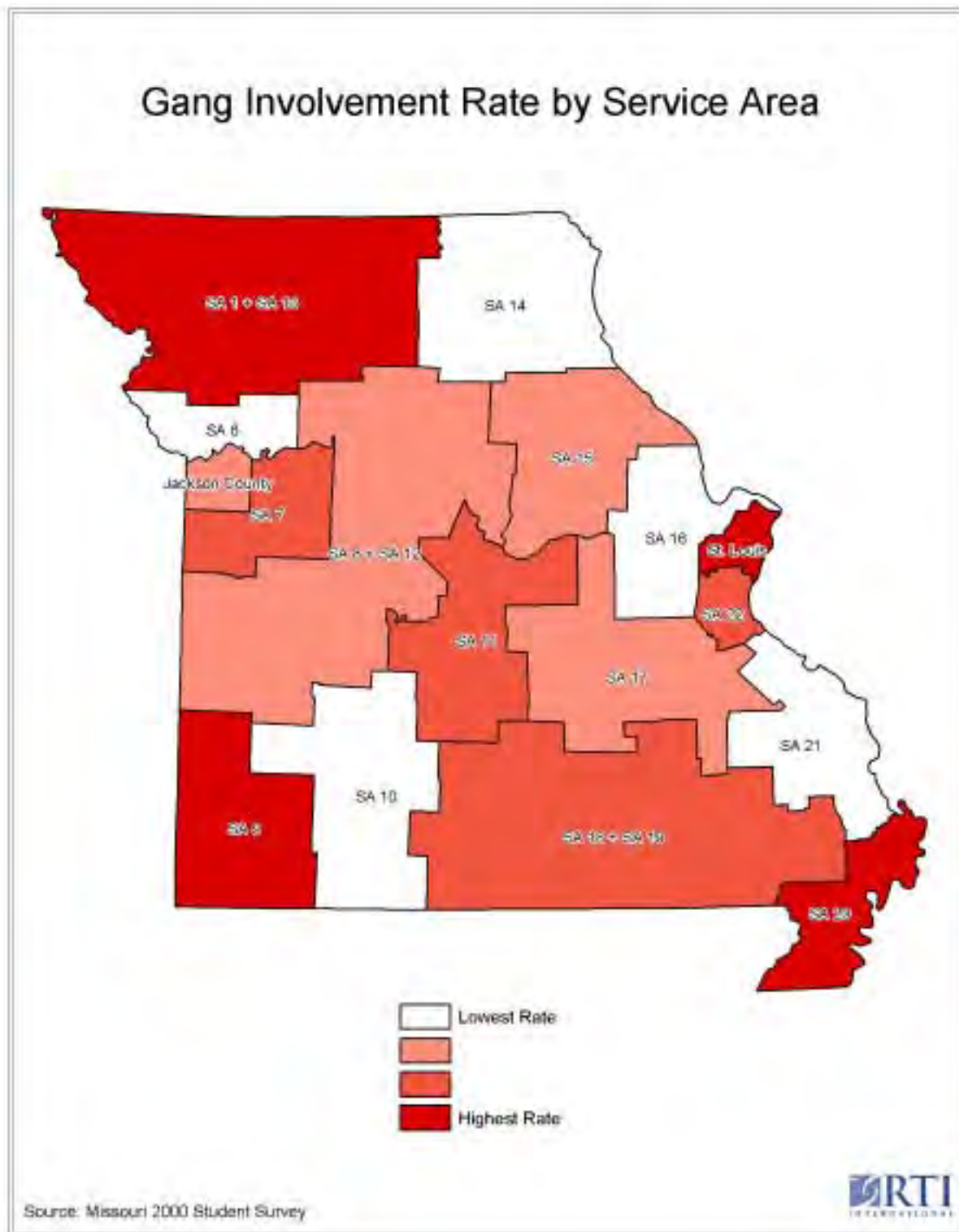


Figure 2.28

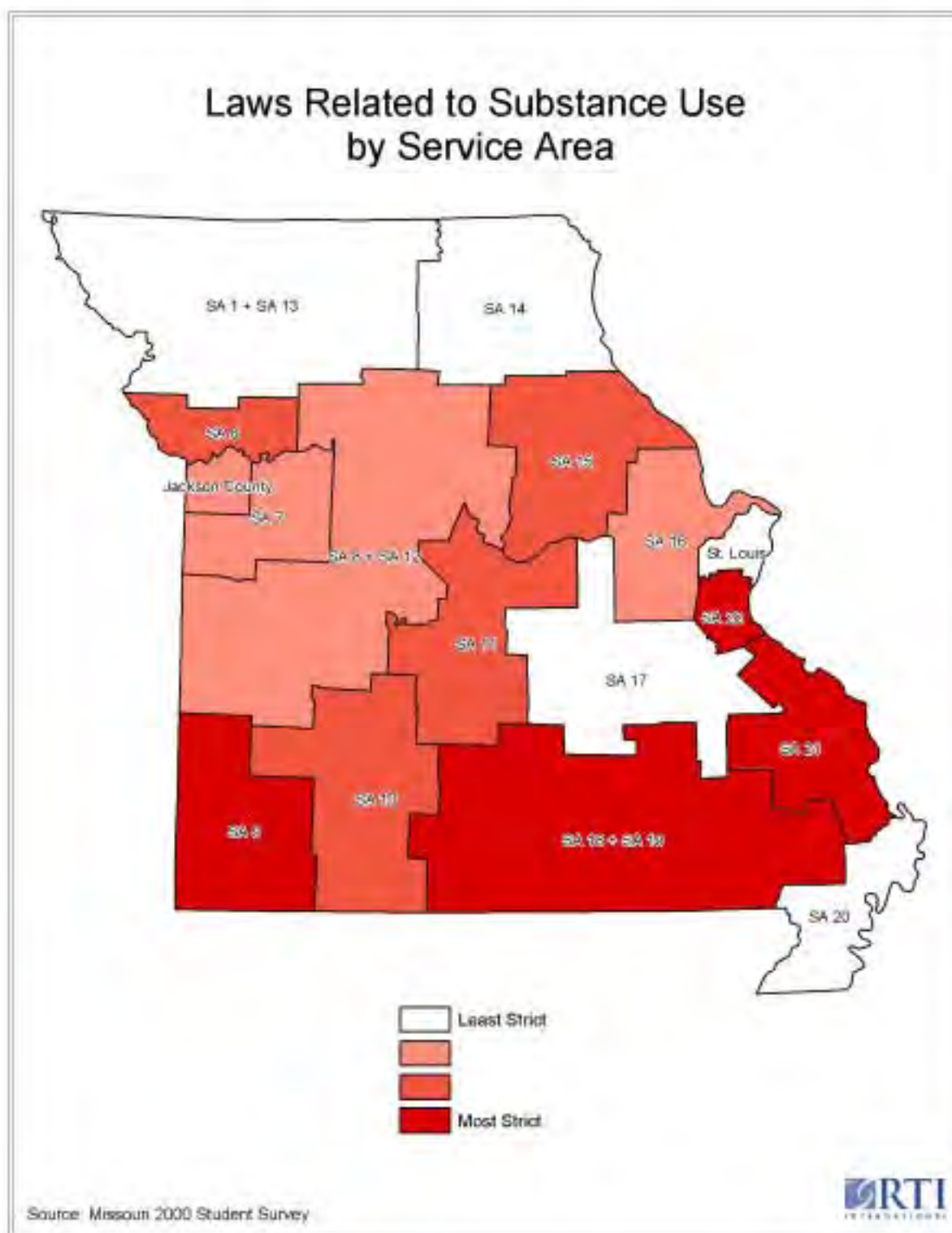


Figure 2.29

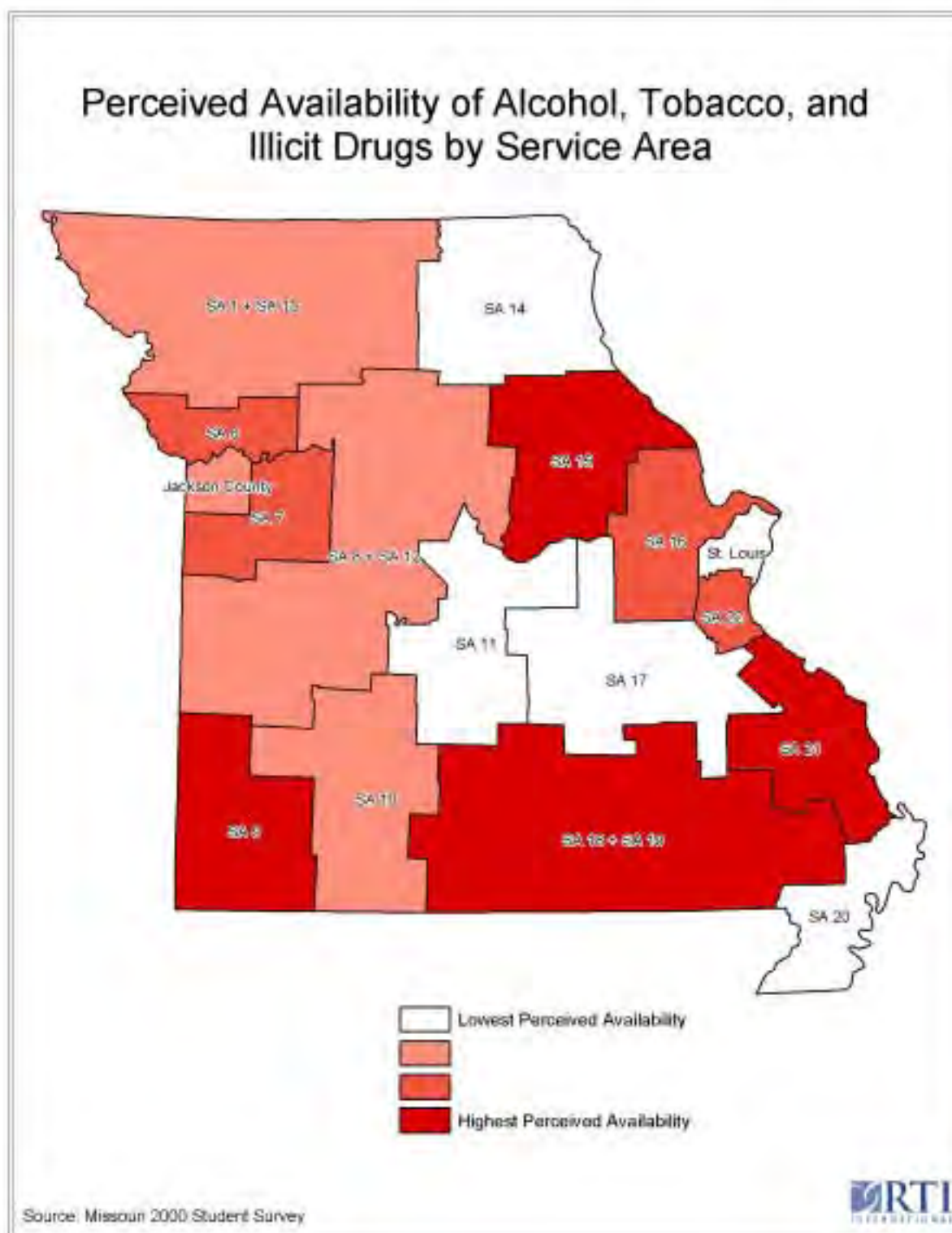


Figure 2.30

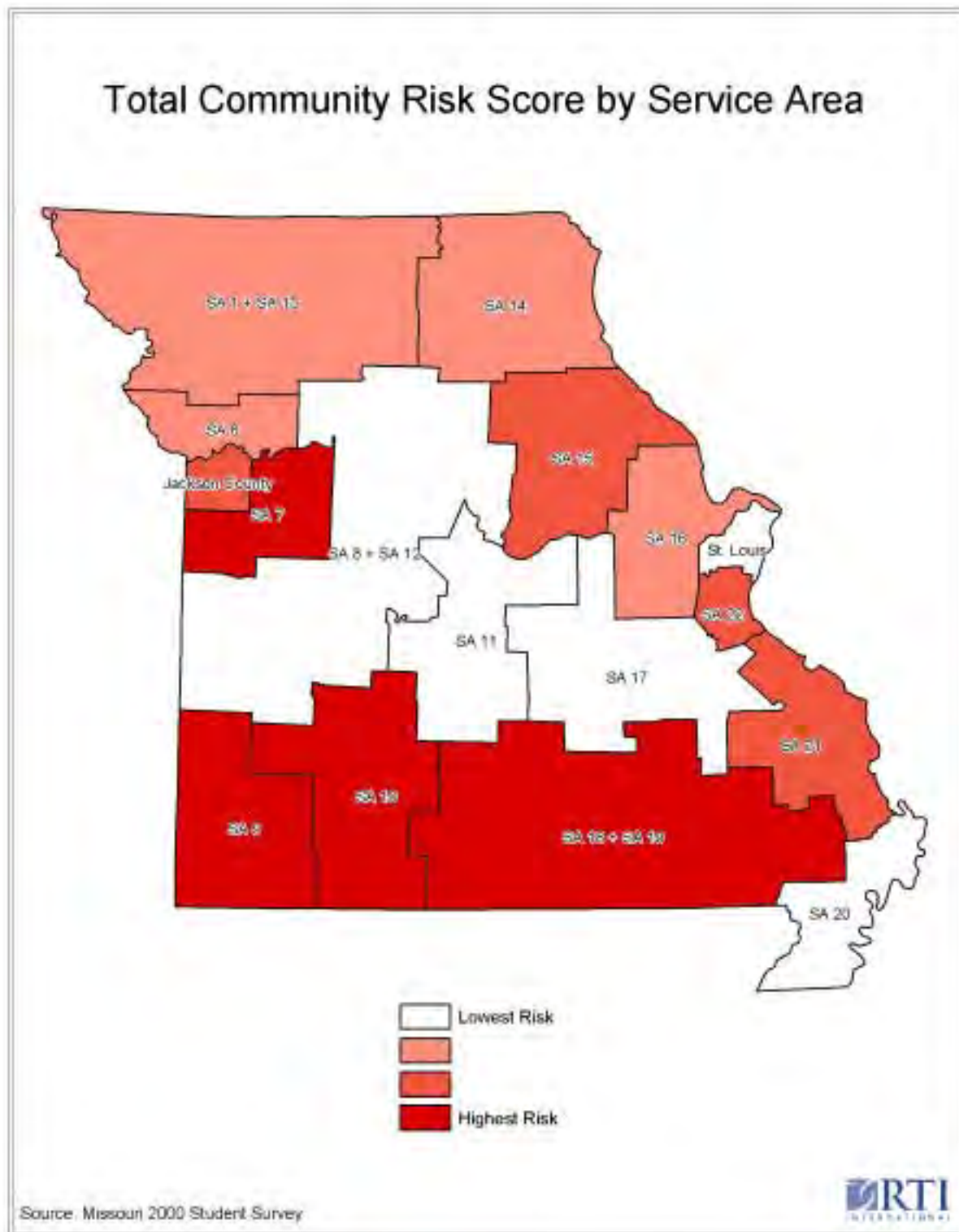


Figure 2.31

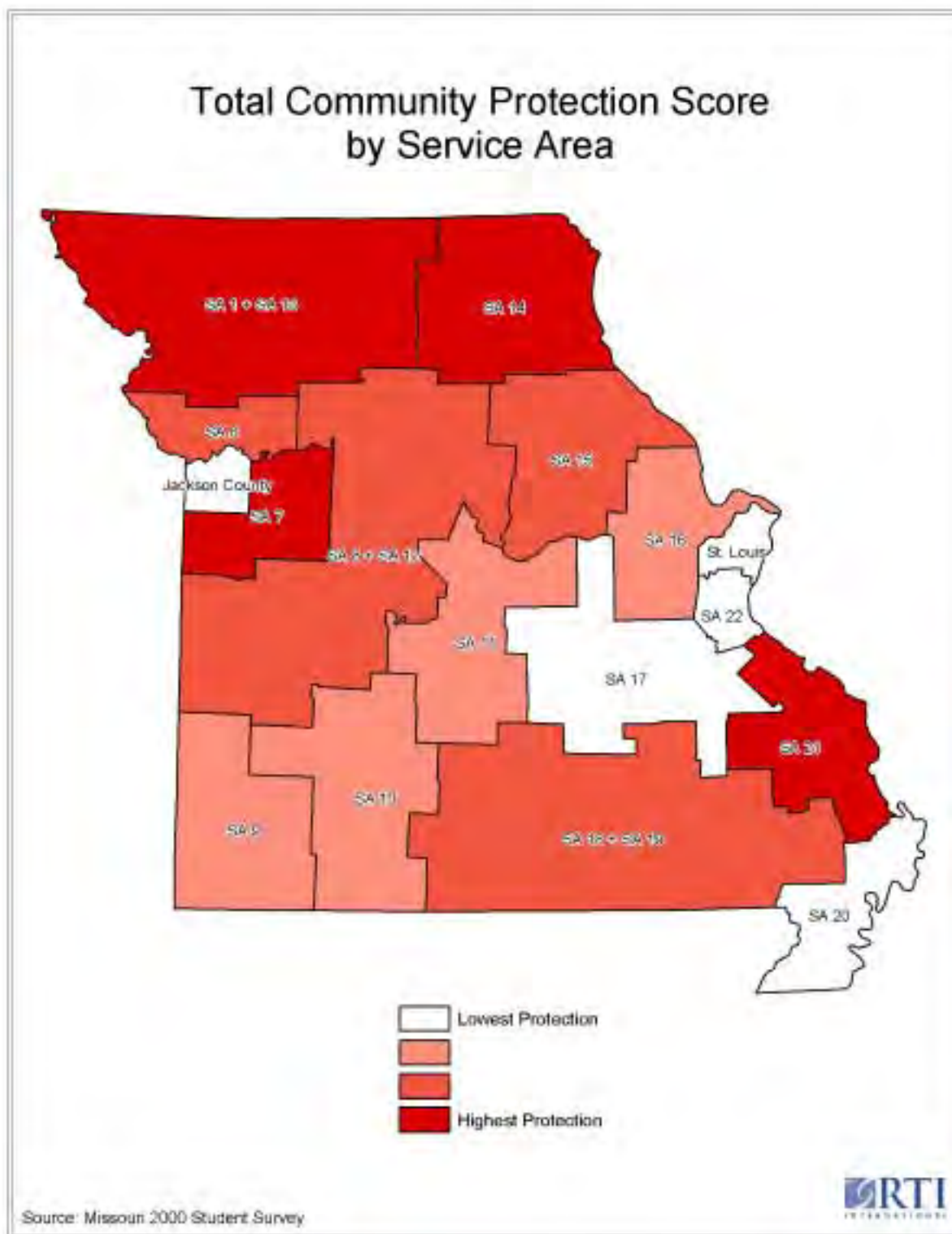


Figure 2.32

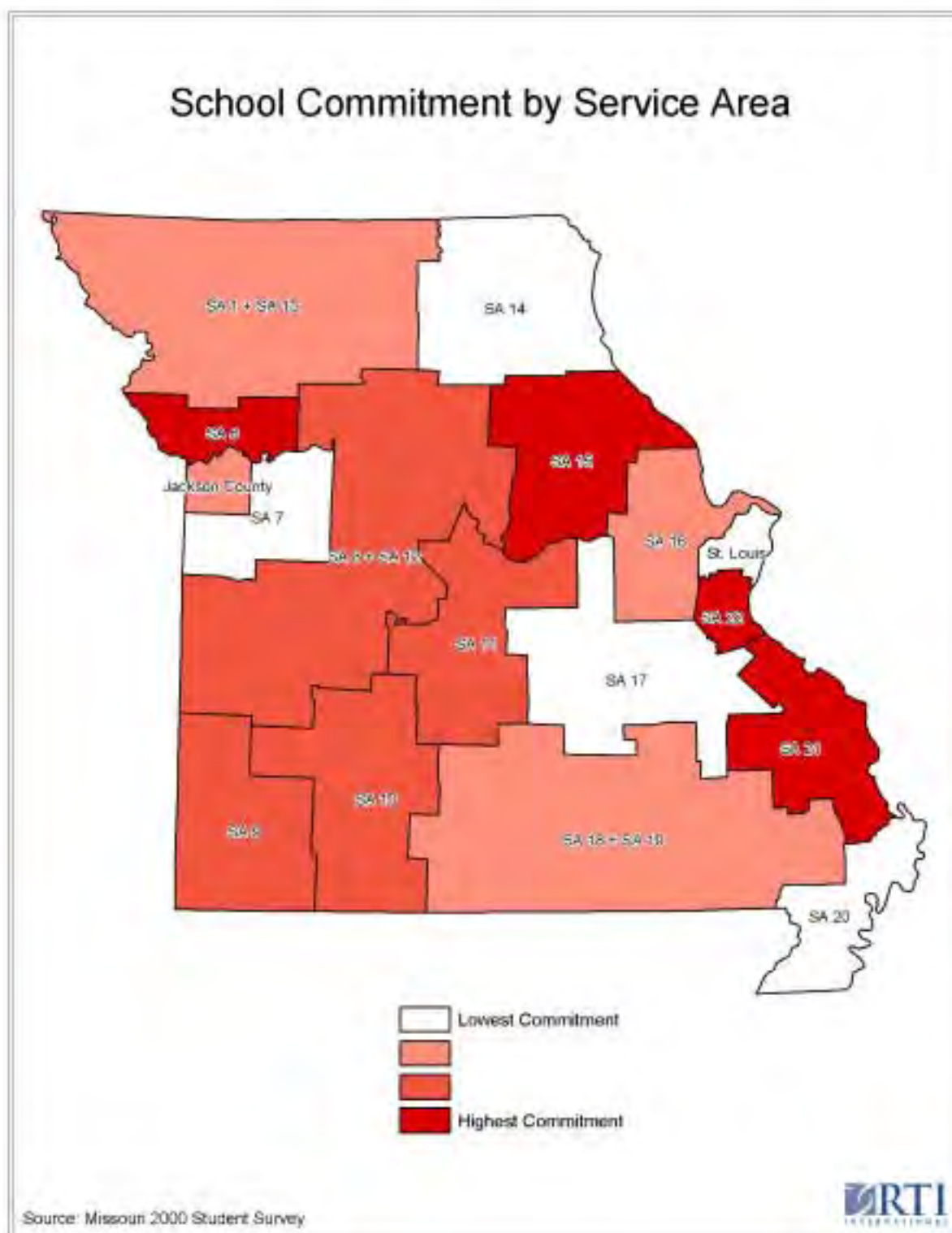


Figure 2.33

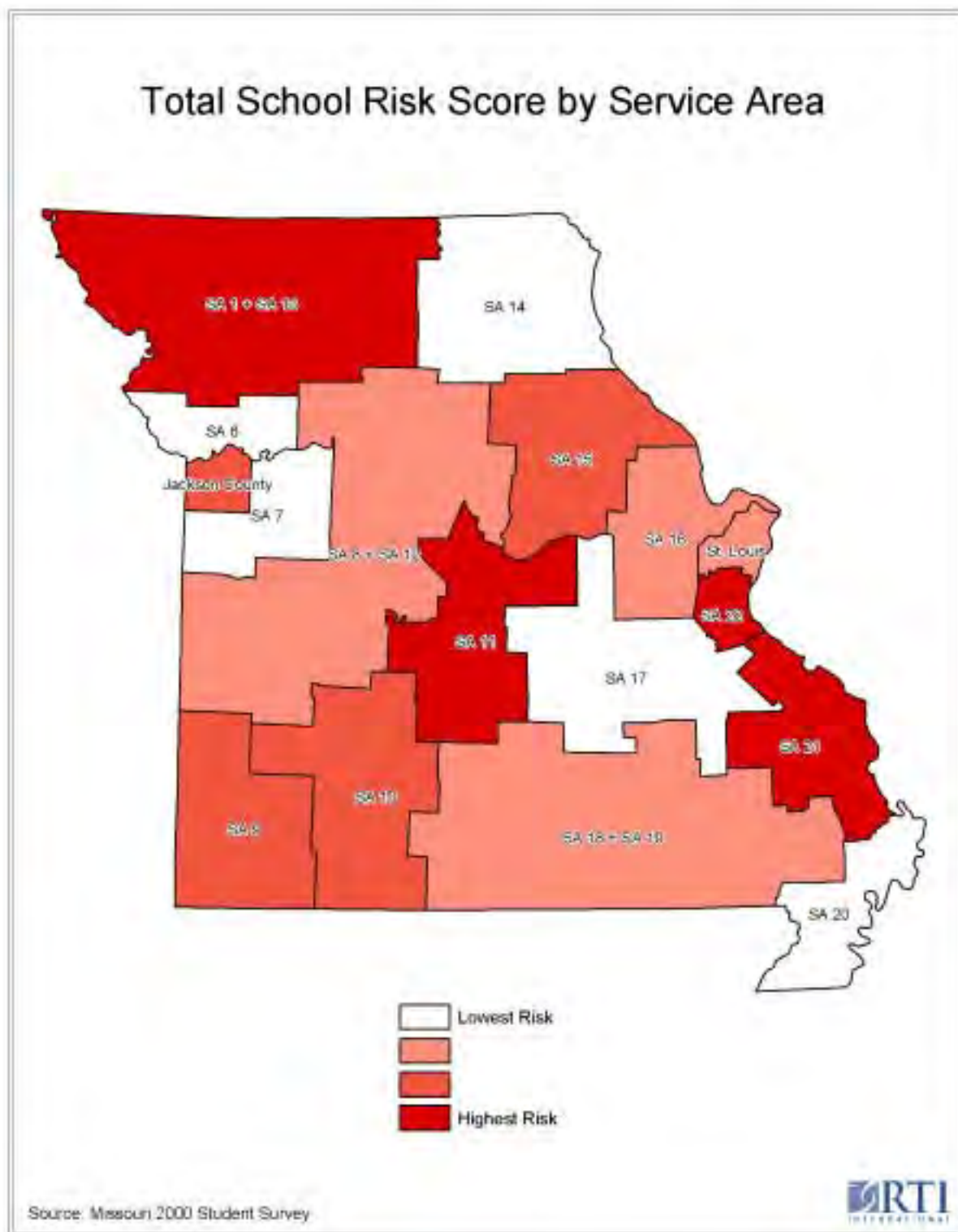


Figure 2.34

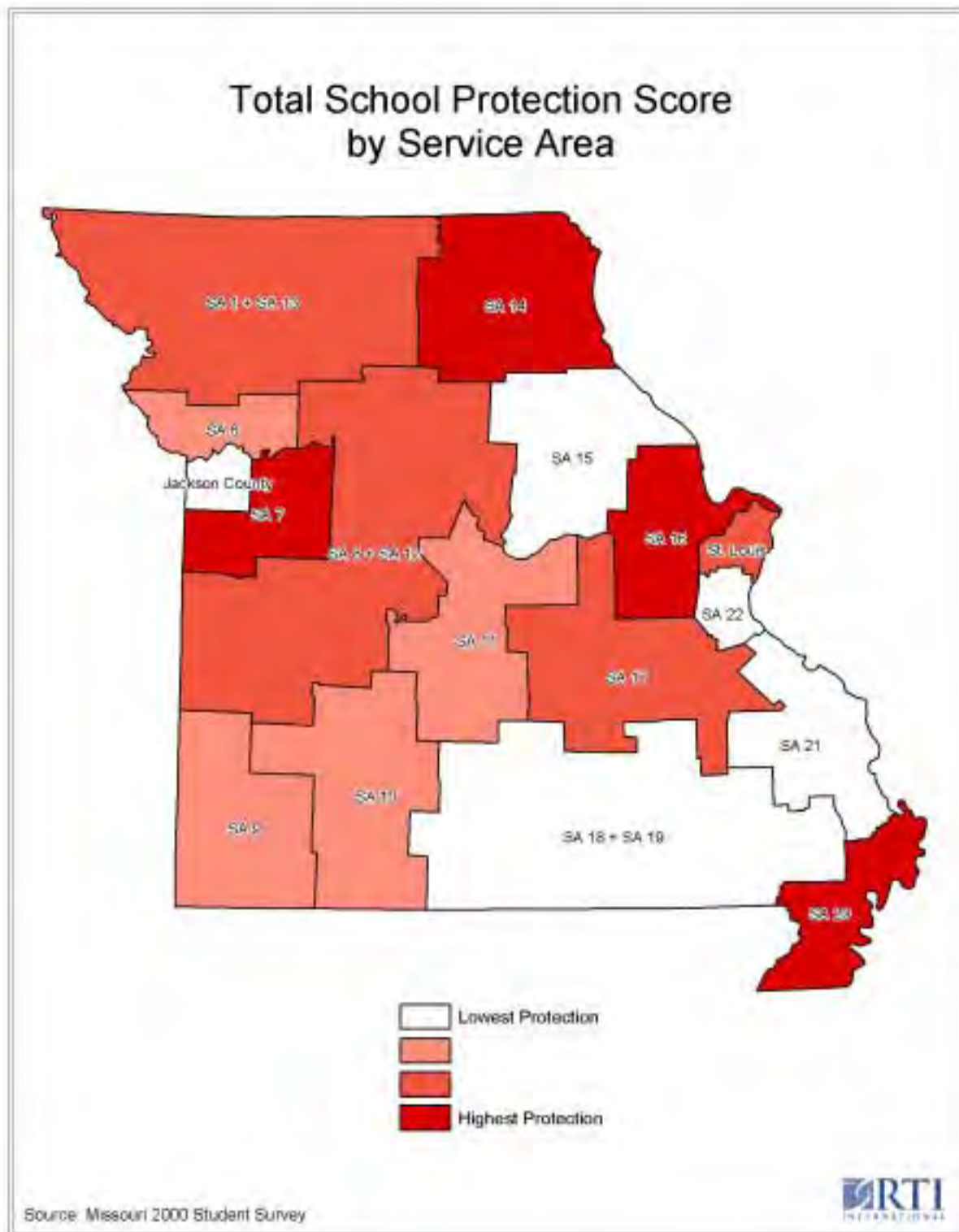


Figure 2.35

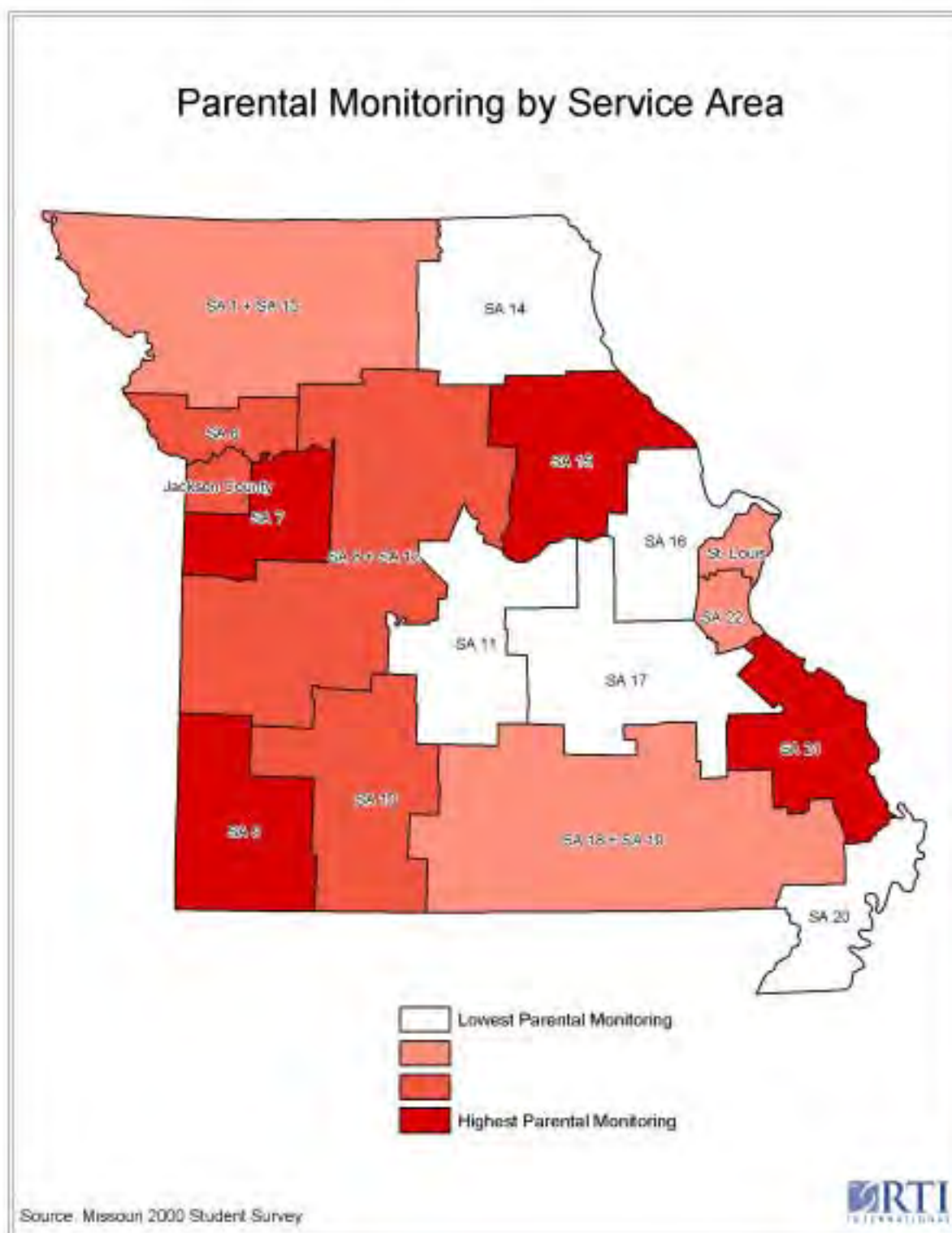


Figure 2.36

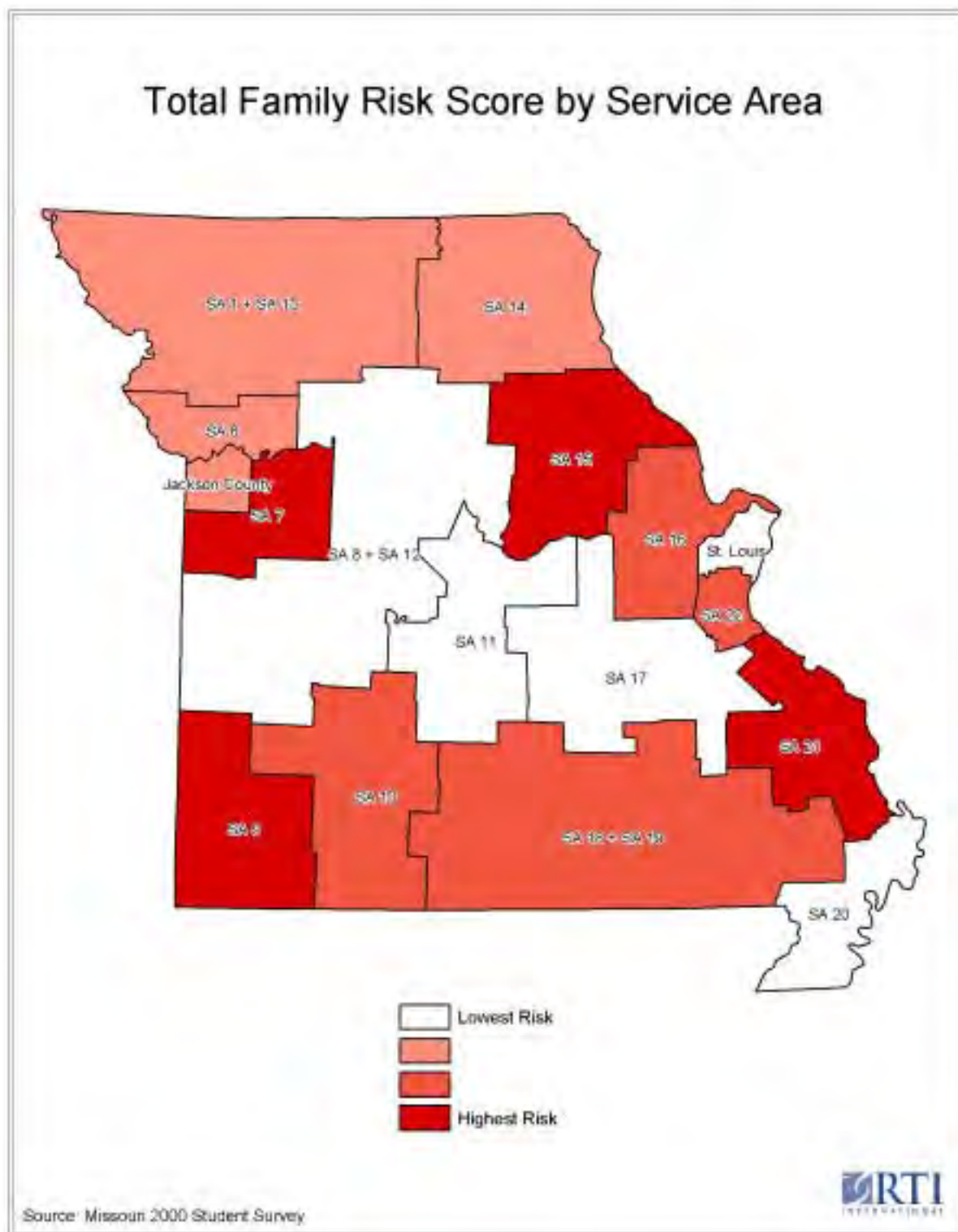


Figure 2.37

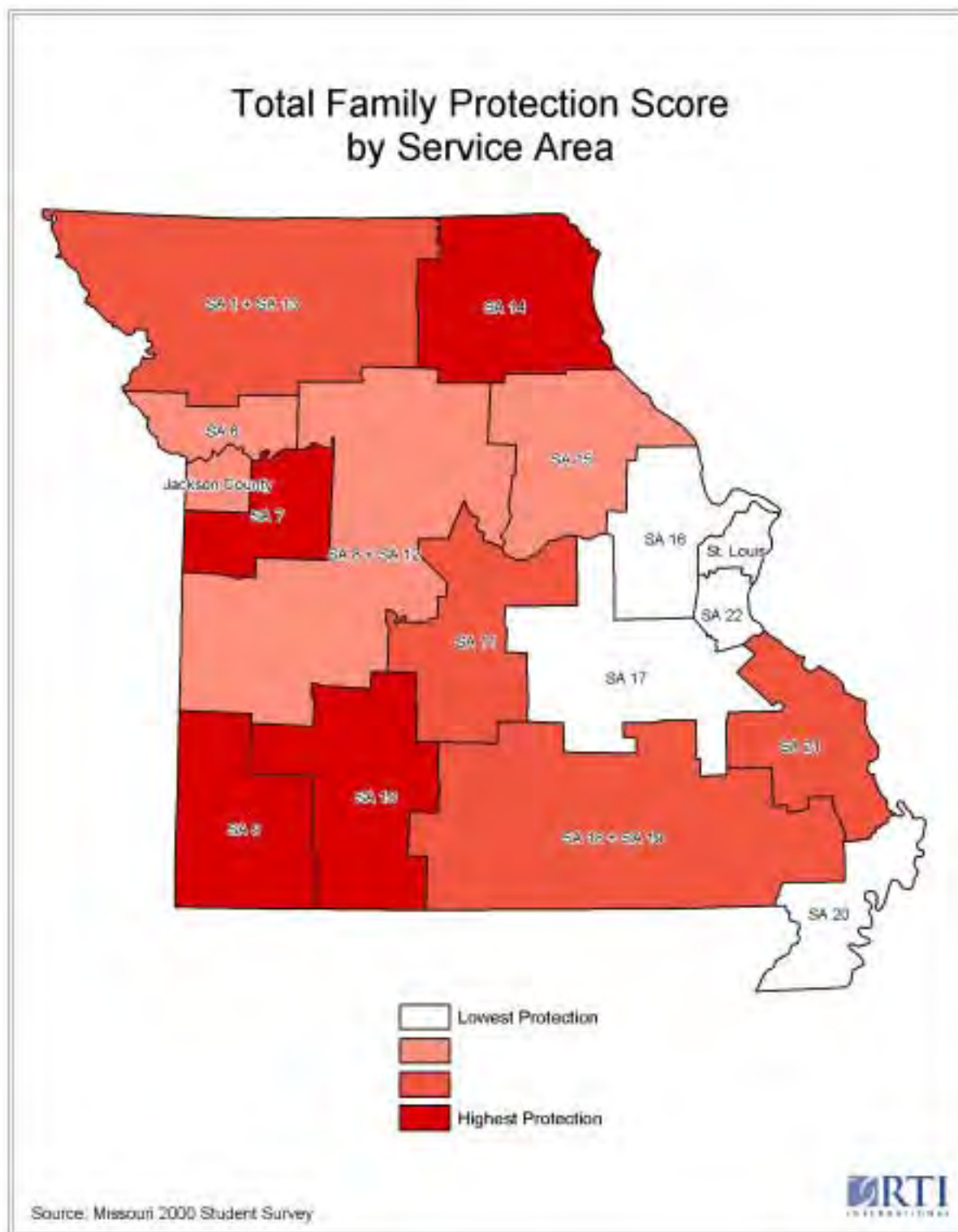


Figure 2.38

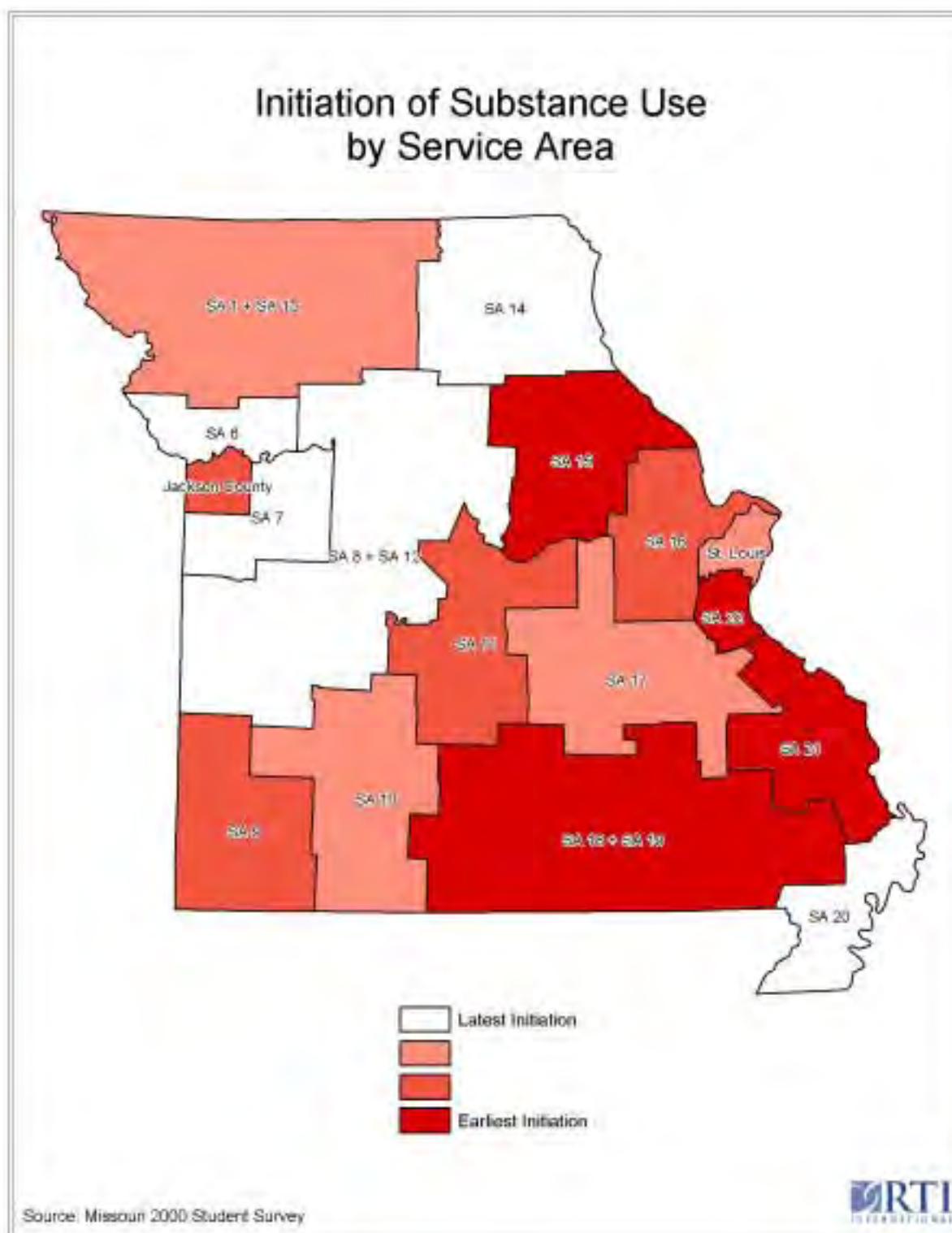


Figure 2.39

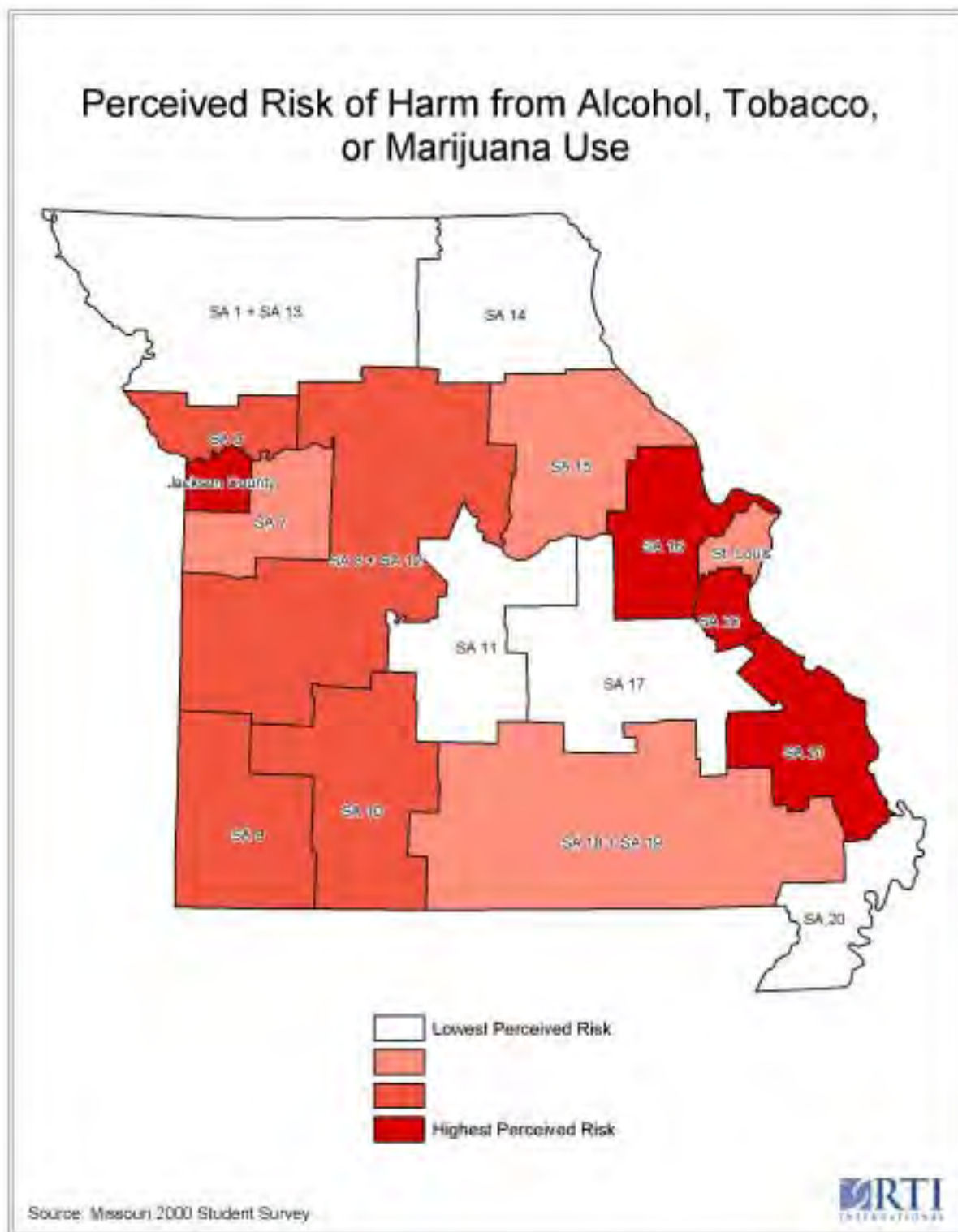


Figure 2.40

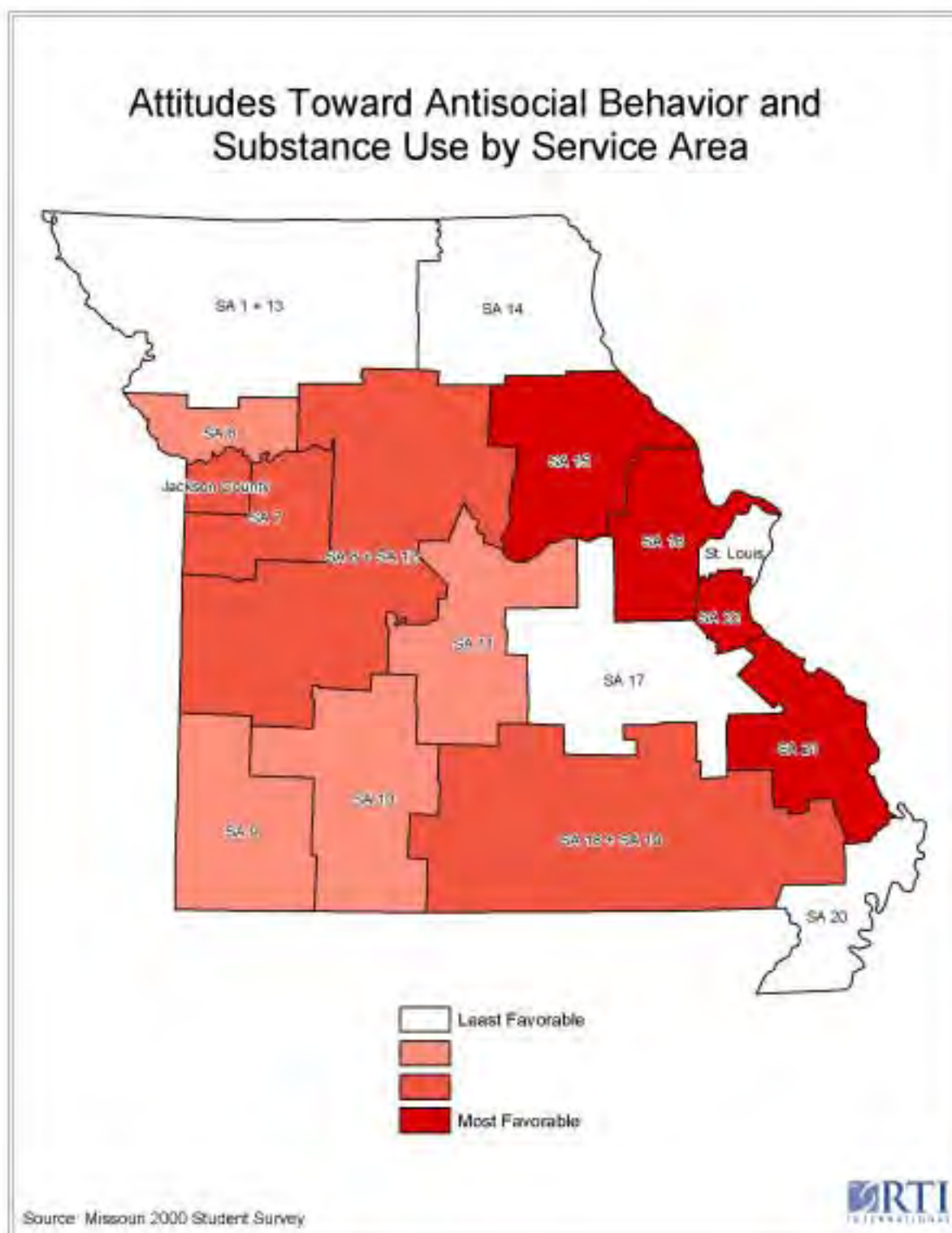


Figure 2.41

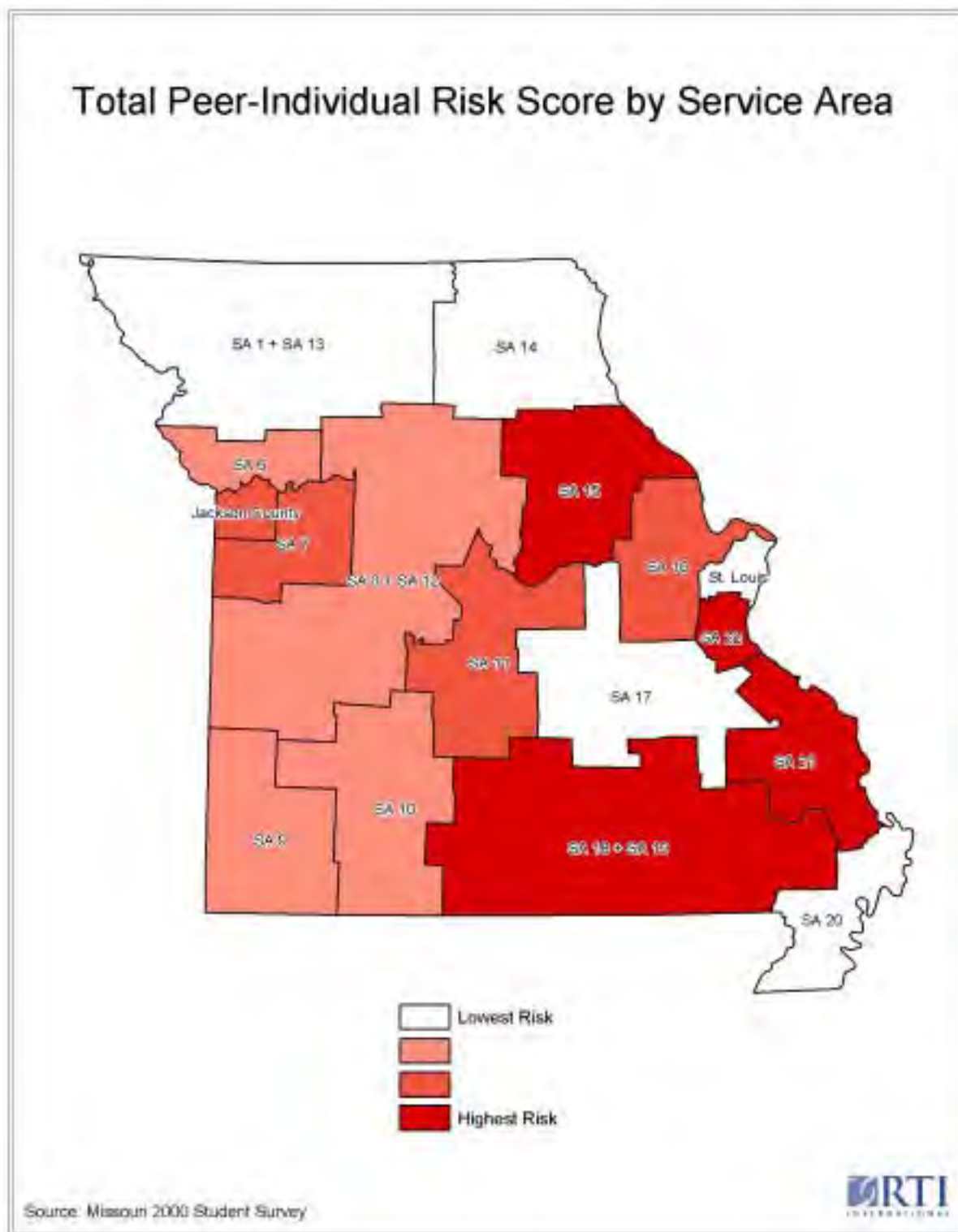


Figure 2.42

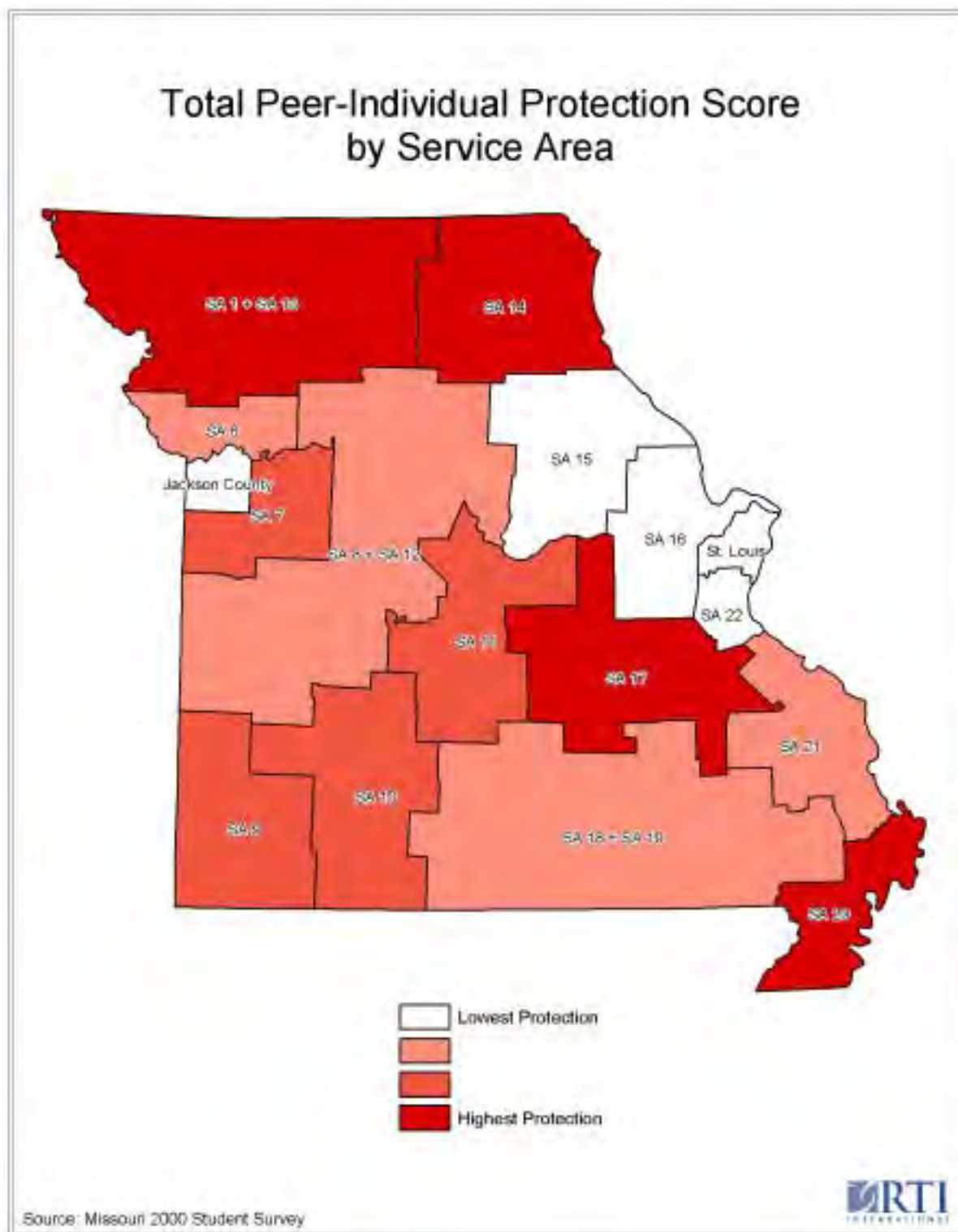


Figure 2.43

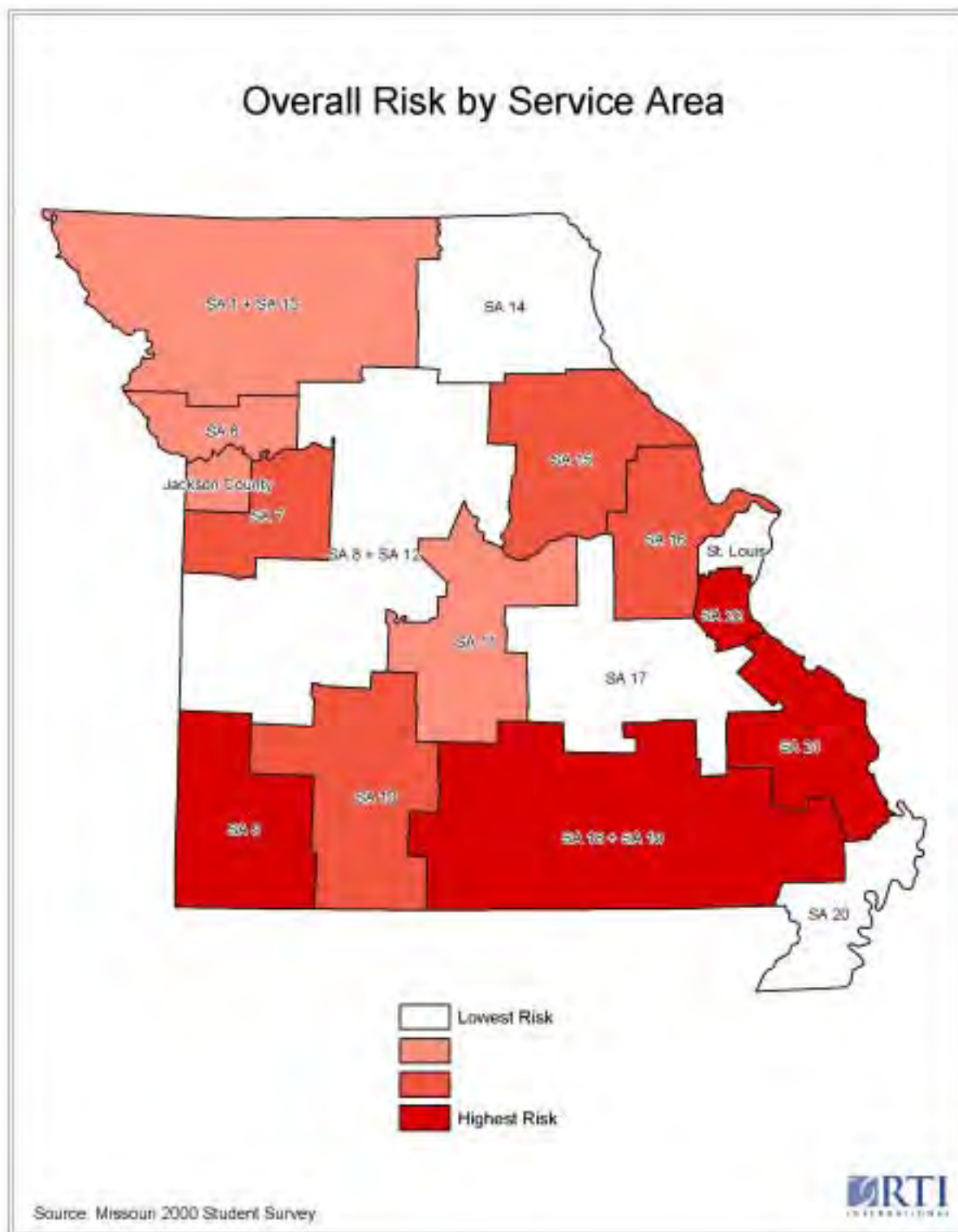


Figure 2.44

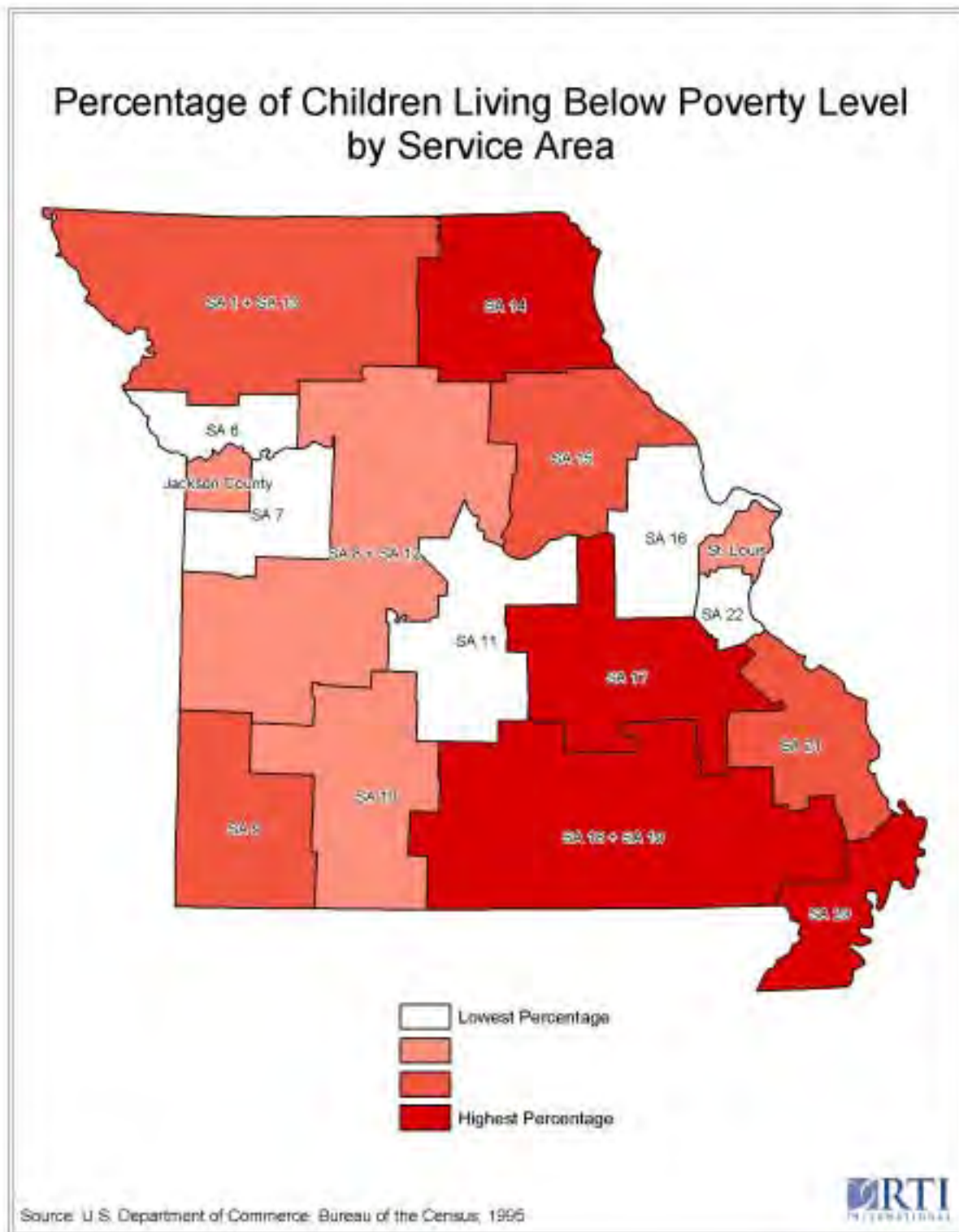


Figure 2.45

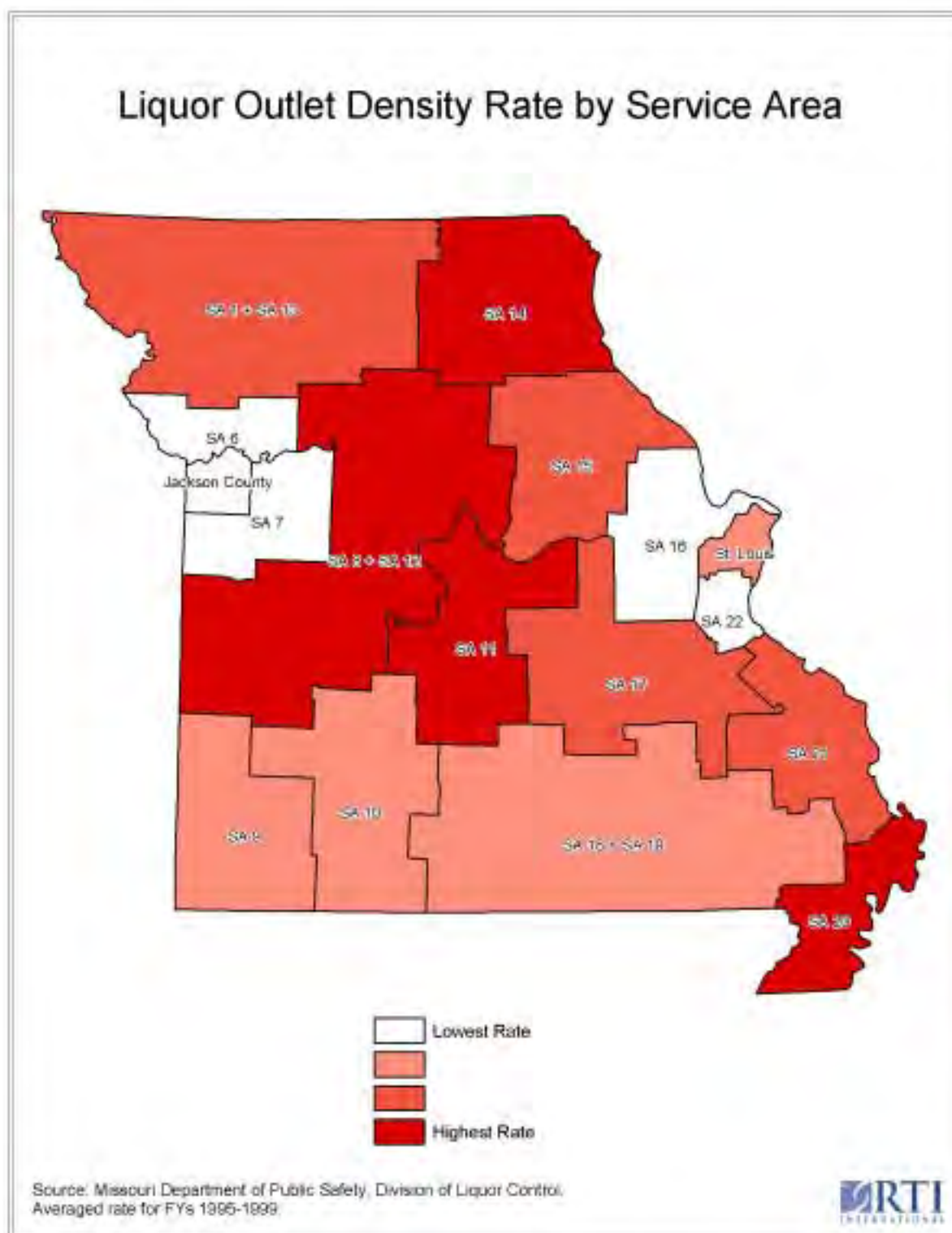


Figure 2.46

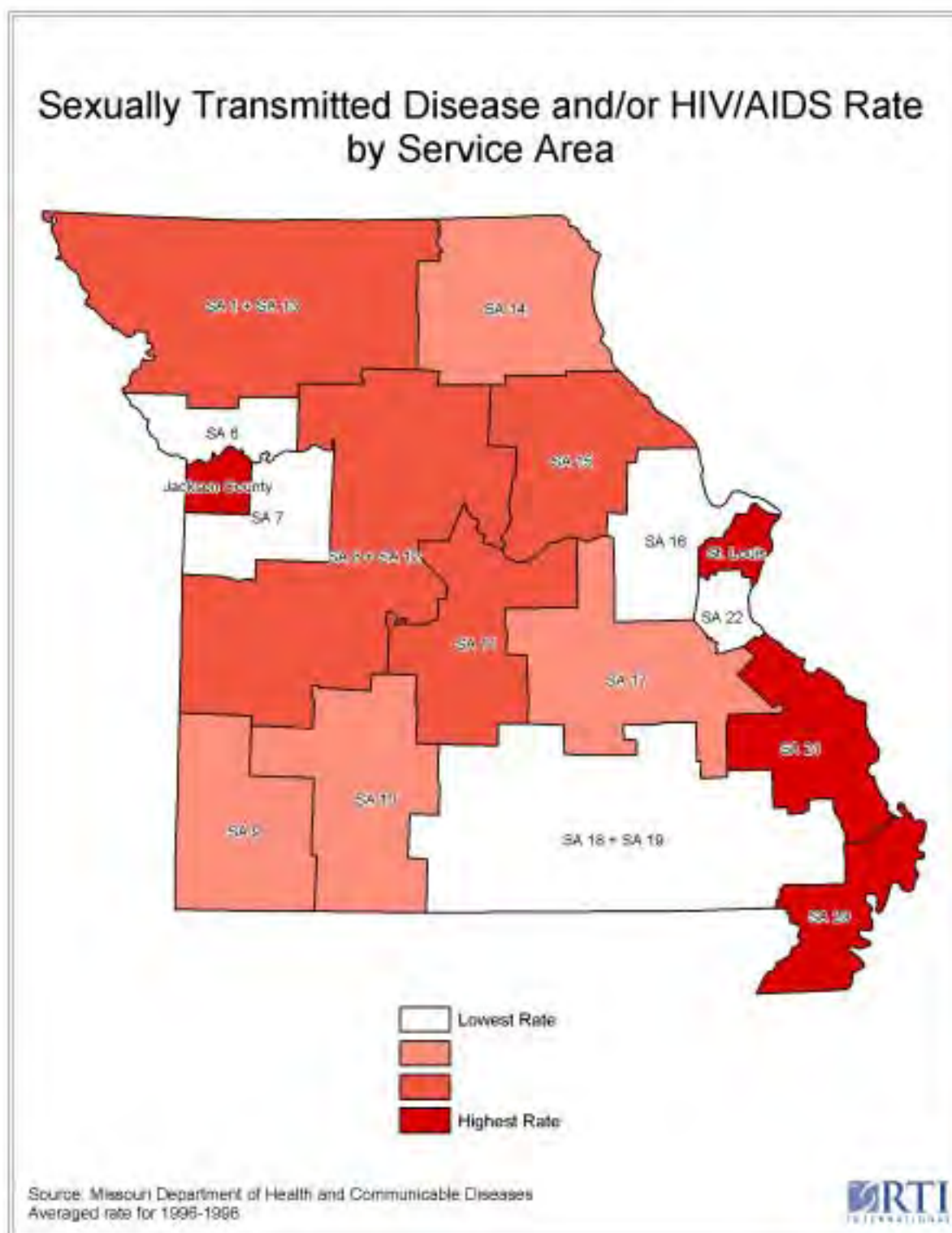


Figure 2.47

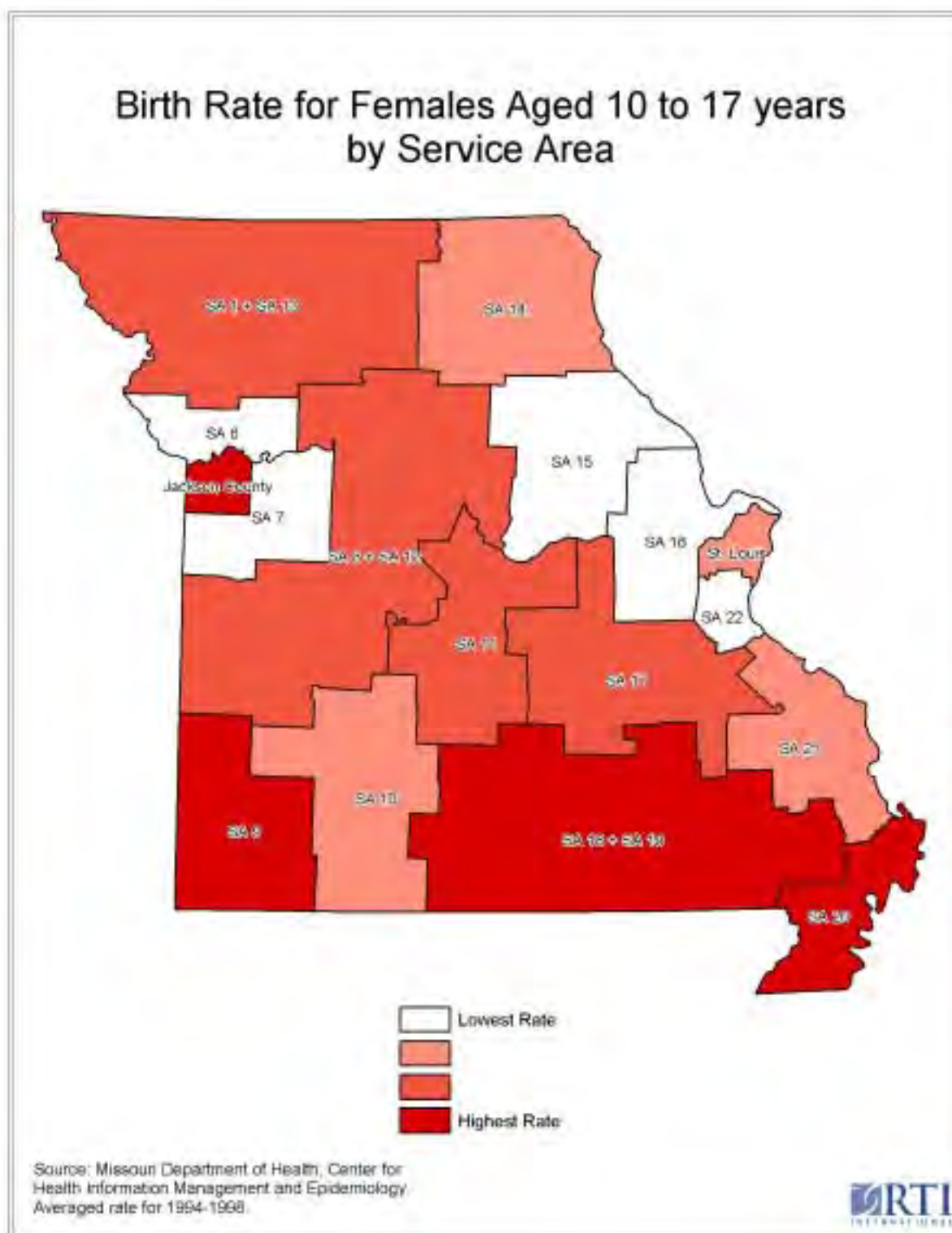


Figure 2.48

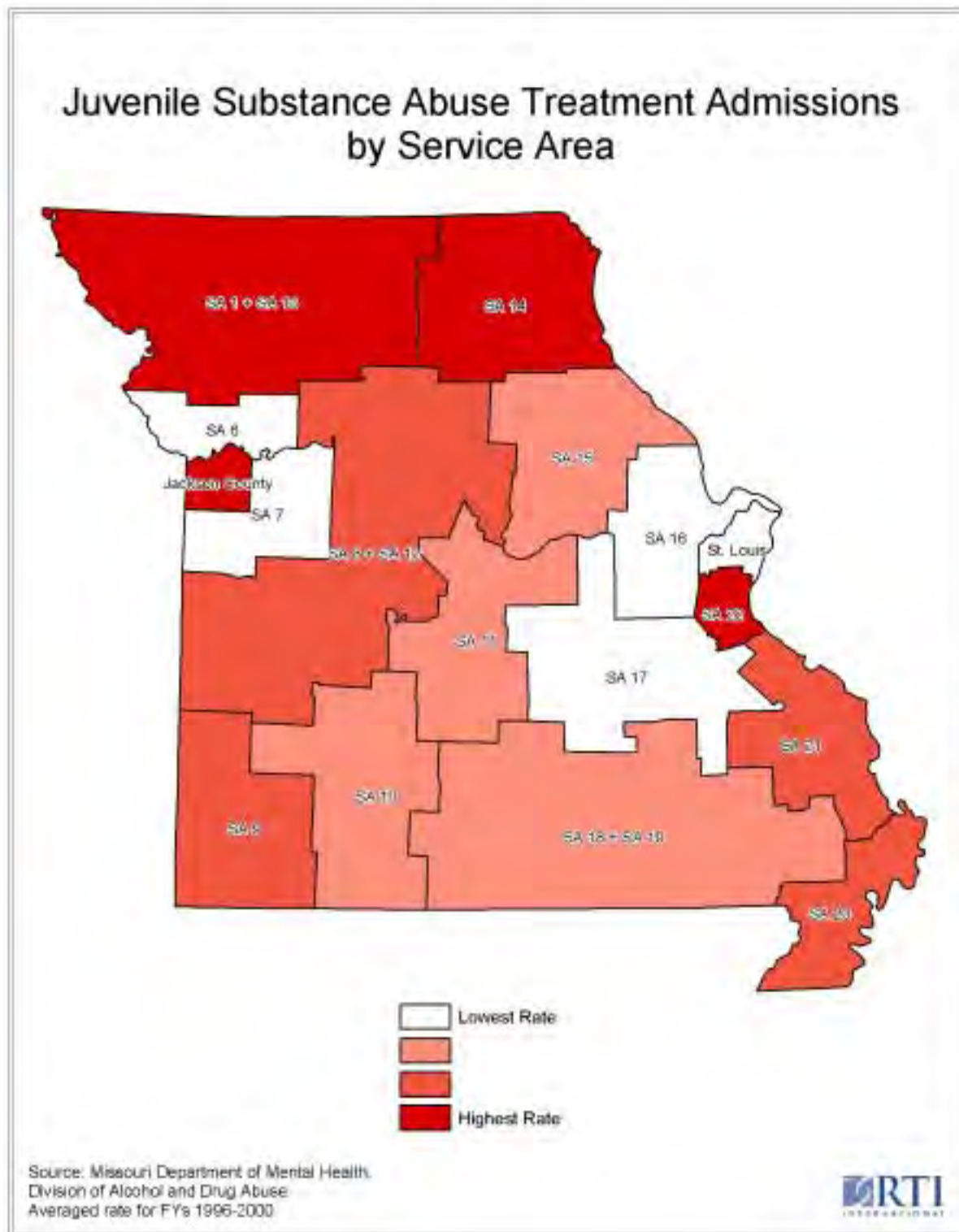


Figure 2.49

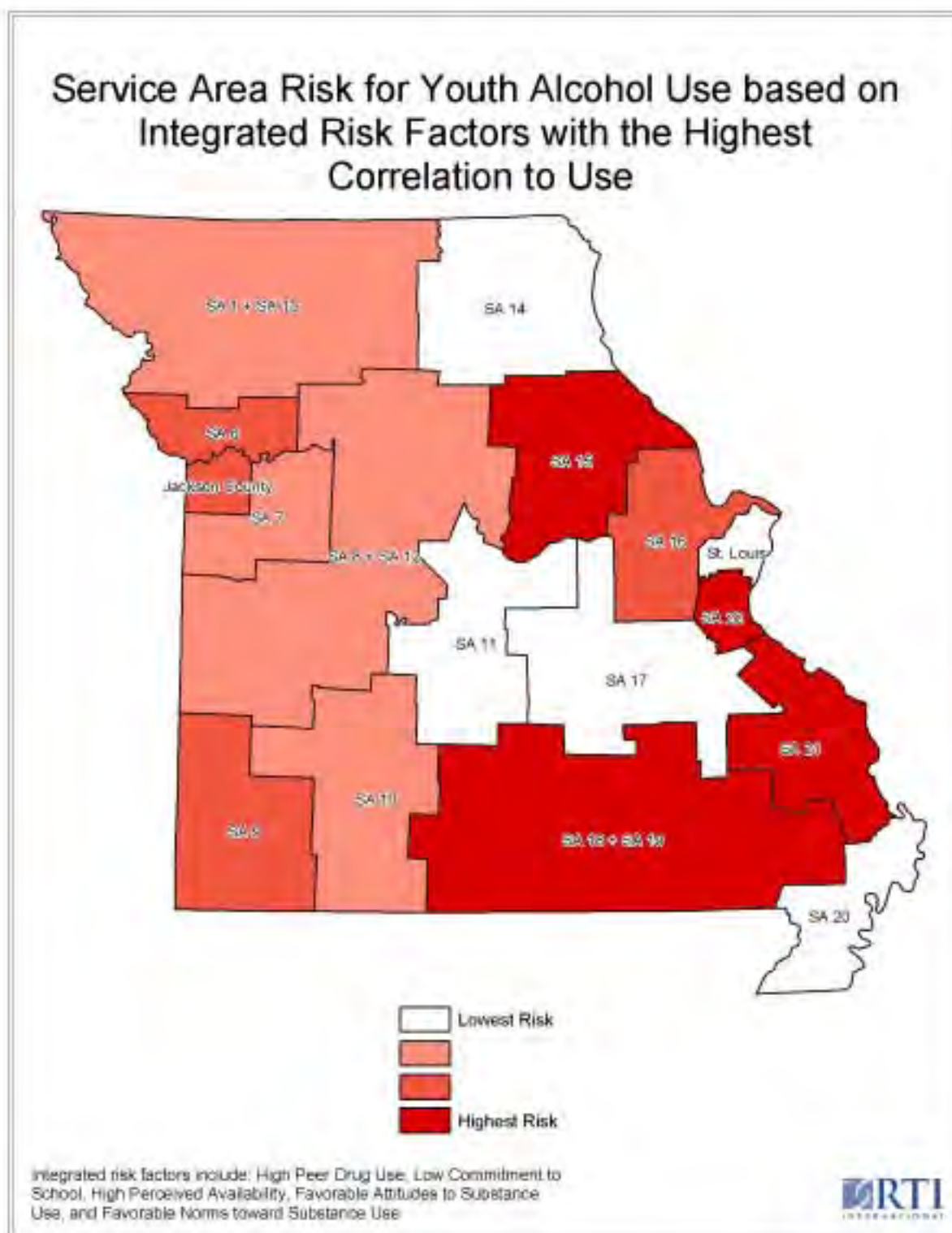


Figure 2.50

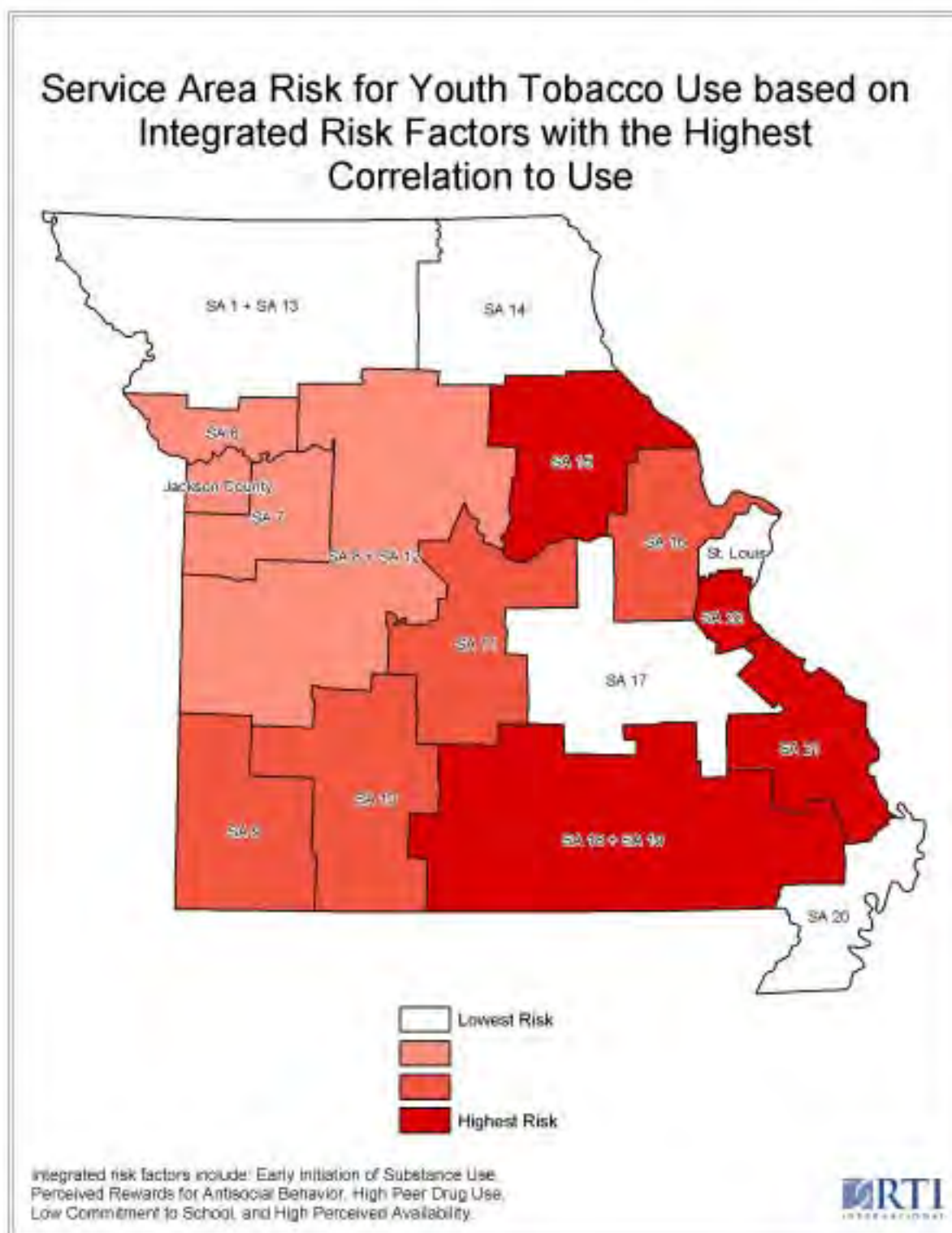


Figure 2.51

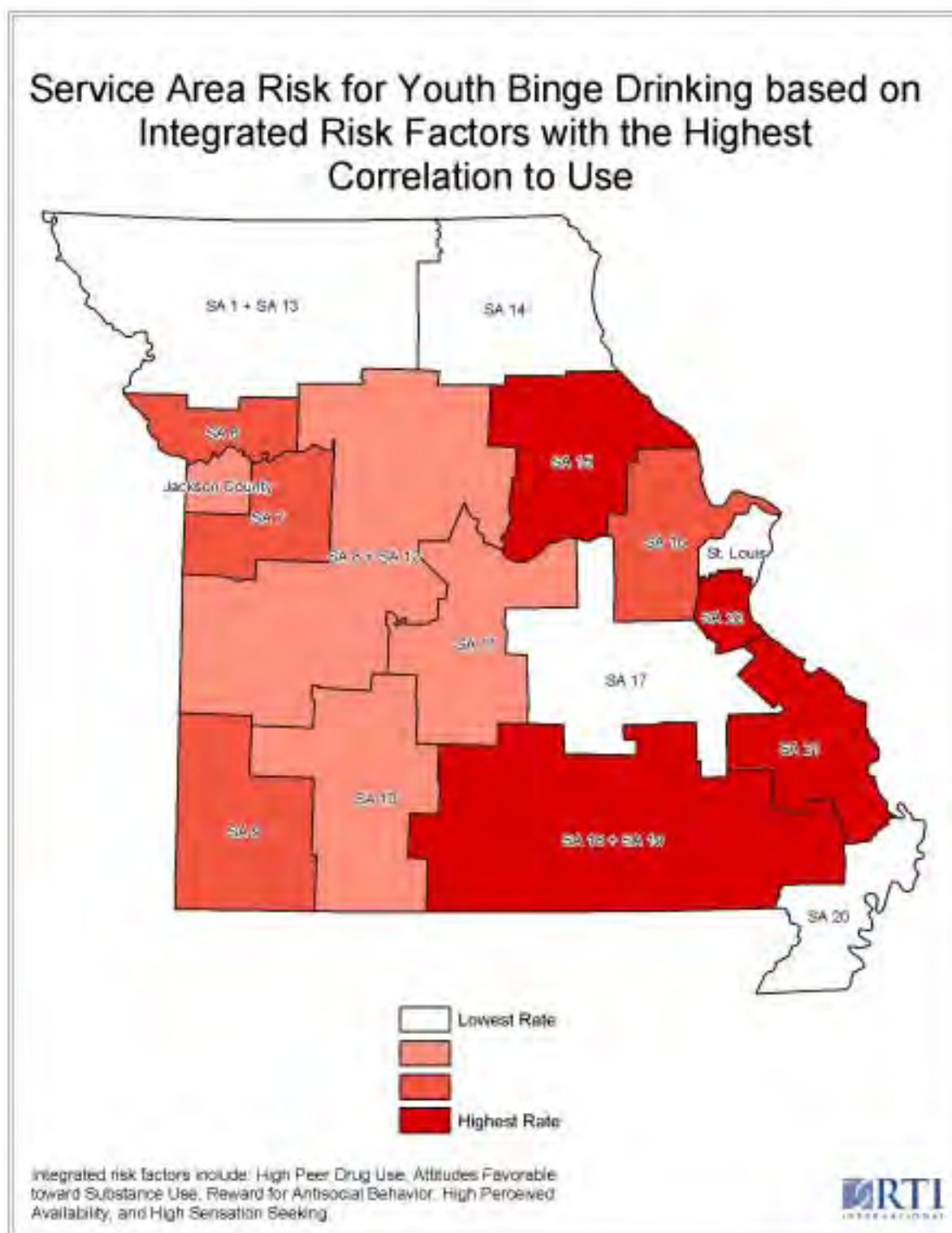


Figure 2.52

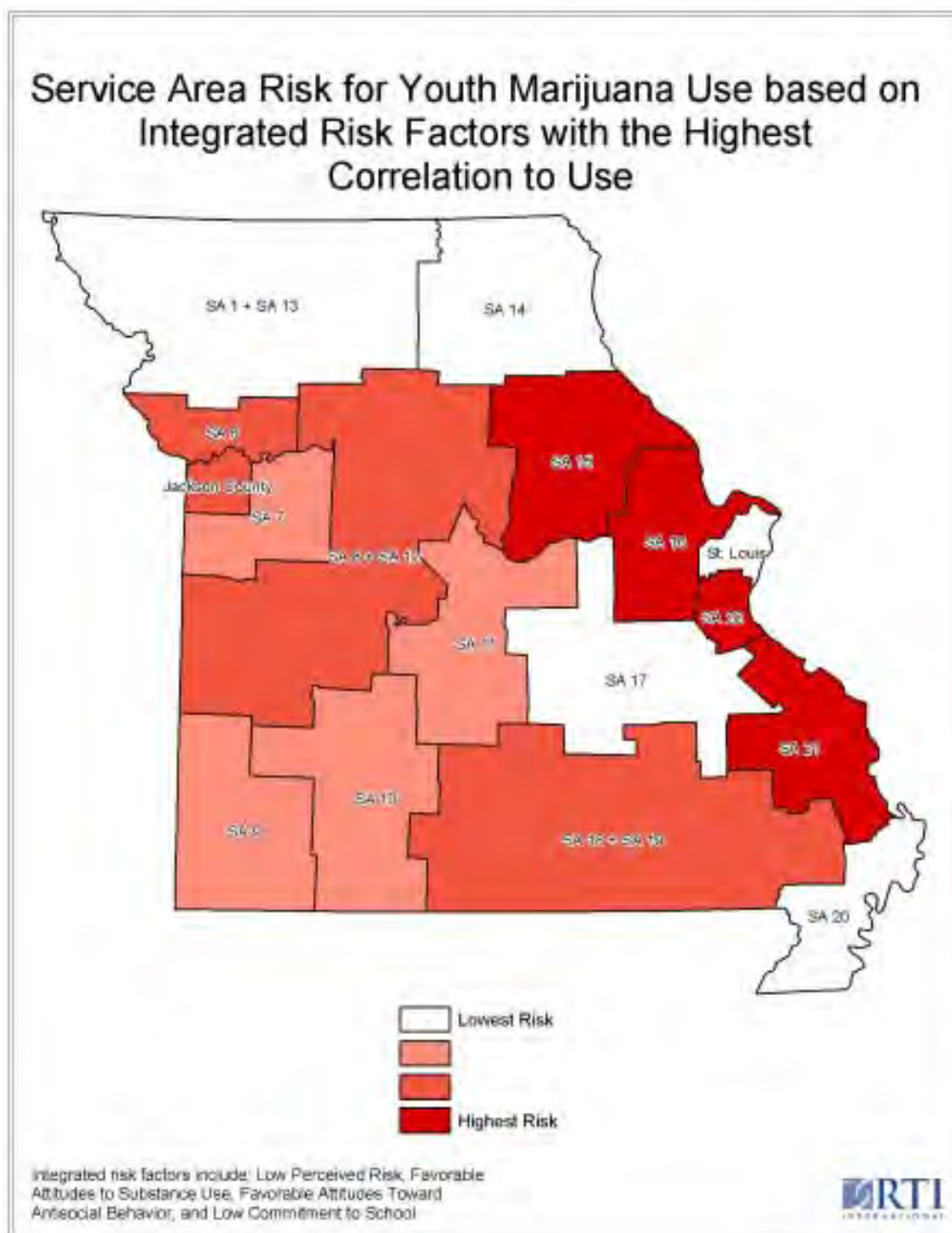


Figure 2.53

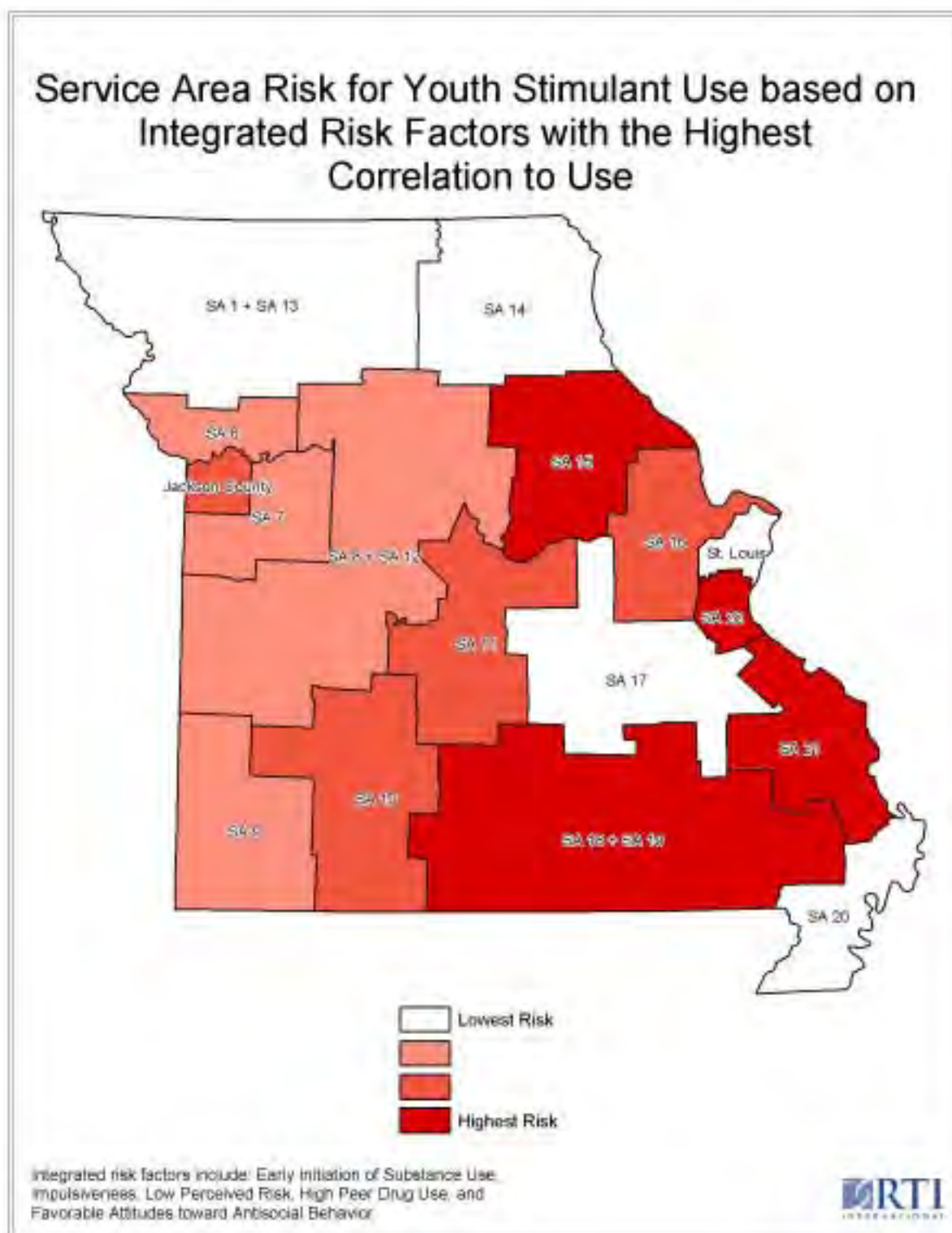
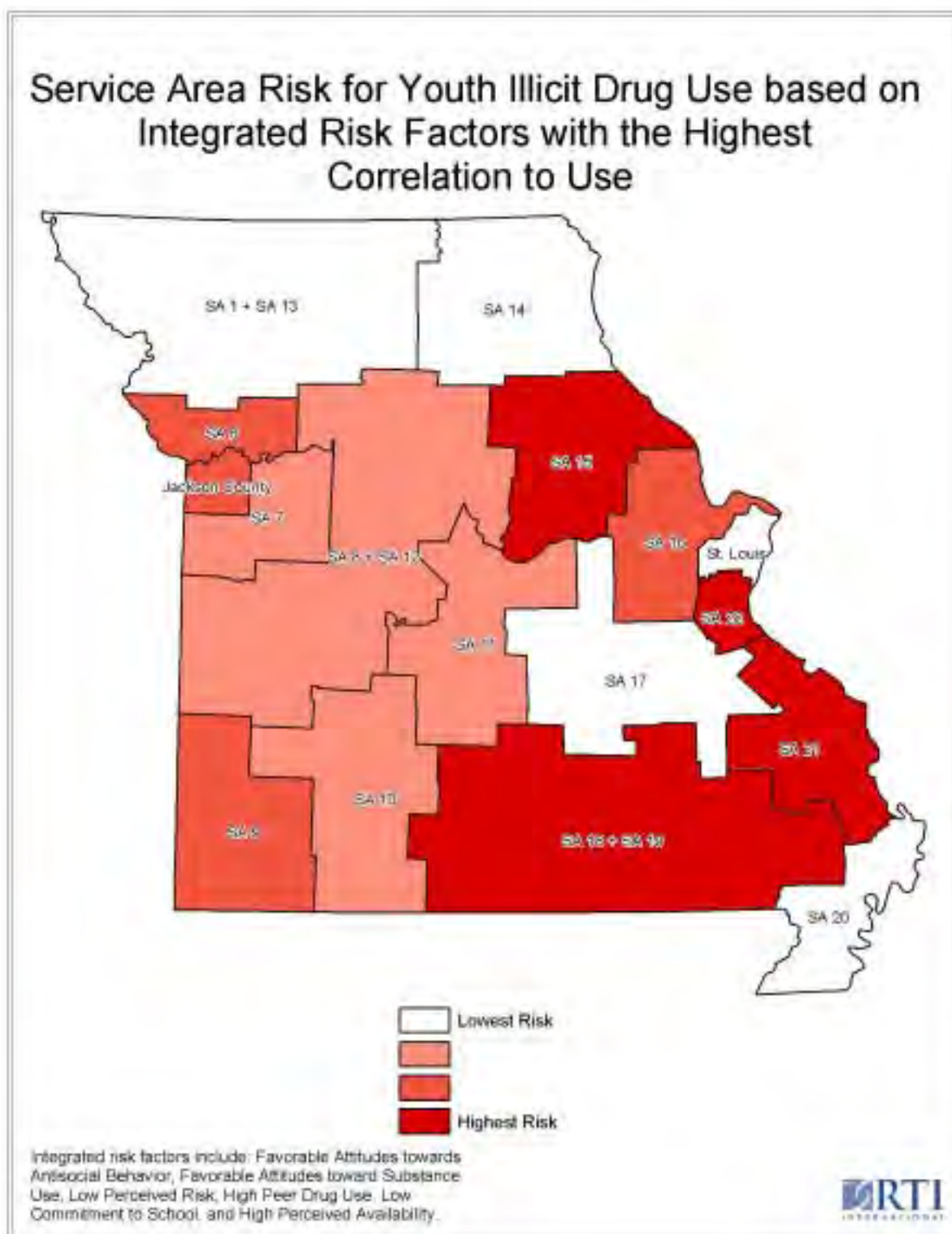


Figure 2.54



3. SUMMARY AND RECOMMENDATIONS

The primary purpose of this report is to develop a conceptual framework and strategy for integrating multiple data sources in order to guide prevention programming decisions at the State and local levels. To meet this objective, existing school survey and social indicator data were integrated and analyzed to assess the degree to which these data could illuminate important foci for programmatic or resource allocation decisions. This chapter summarizes the key points in these efforts and concludes with recommendations for future steps in developing and implementing a research-based prevention systems approach.

The conceptual model presented in Chapter 1 identifies three essential components of a research-based and comprehensive prevention service system:

1. data on substance use and related risk/protective factors;
2. data on prevention resources and services; and
3. information regarding the efficacy of prevention services.

Unfortunately, this project was unable to obtain information about prevention resources in order to consider gaps between need and available services. However, we have sufficient descriptive information about the prevalence of substance abuse and related risk factors by service areas to explore high-risk subgroups or geographic areas and to identify potential substance abuse prevention strategies or programs to match these needs.

Results from Chapter 2 suggest that certain variables from the Communities that Care (CTC) school survey stood out as significant risk factors for identifying substance abuse problems. Prevention needs assessments are particularly challenging because the intent is to predict the likelihood of an outcome that will occur in the future. Thus, we must rely on knowledge from research studies that indicates the factors that are most strongly associated with the future development of substance abuse problems. These factors (i.e., risk factors) are included in surveys such as the CTC in order to highlight malleable factors for intervention focus. Effective interventions have been designed to reduce these risk factors, thus decreasing the probability of developing substance abuse problems. Protective factors are also included in the CTC and serve as targets for intervention. Protective factors may buffer or reduce the effects of risk on substance use outcomes or have direct effects in reducing the probability of future substance abuse problems. Our results suggest that substance use is higher in communities with high drug availability, lax law enforcement, and community norms favorable to substance use. Other high-risk areas include those in which a large number of youth report low commitment or

bonding to their schools. Service areas with a large number of families with poor parenting skills are another important focus for intervention. Our research suggests that areas in which more youth report family conflict, inappropriate discipline, and poor family management skills are more likely to have substance-using youth. Moreover, areas in which a large proportion of parents endorse or do not discourage substance use are another important target for intervention. Peer-related variables are very important in identifying high-risk youth. Youth who associate with substance-using peers are much more likely to report that they drink or use drugs as well. Areas in which higher proportions of youth report positive attitudes toward drug use, low perceived risk or harm associated with drug use, and high perceived rewards for unconventional behavior are areas in which substance use problems are more likely to develop. Thus data from the CTC survey provide valuable information for the planning and provision of substance abuse prevention services by highlighting areas with risk factors known to be associated with problem behaviors.

Information about which risk factors are high in which geographic areas is not only useful for the selection and implementation of specific prevention programs designed to alter the identified risk, but also may provide important outcome measures for the evaluation of prevention systems or for accountability requirements. For instance, SAMHSA is in the process of converting the SAPT Block Grants to PPGs. This new approach is designed to allow greater local flexibility in the use of grant funds while enhancing the measurement of progress toward program goals. As it is currently proposed, each State will negotiate with DHHS regarding a set of performance measures to be used to monitor performance toward reducing substance use. Results from this study suggest that the outcome measures proposed by SAMHSA, including early initiation of use, perceived risk, attitudes toward use, commitment to school, parental attitudes, family management, perceived availability, community laws, and norms, are relevant risk factors for Missouri youth, particularly for alcohol use (several of these risk factors were not correlated with illicit drug use). Thus, these factors may be important foci for evaluating the effectiveness of prevention efforts and would be considered relevant performance measures.

Unfortunately, the utility of the social indicators for identifying high-risk areas was poor. Many social indicators were not correlated or were correlated in the opposite direction from what was expected. Indicators were slightly more useful in identifying areas with high rates of antisocial behavior or gang involvement. Specifically, juvenile arrest rates for violent crime, juvenile arrests for drugs, population density, STD rates, teen birth rates, and poor achievement score rates were “predictive” of a composite measure of substance use, antisocial behavior, and/or gang involvement. Besides these measures, other social indicators did not appear useful for identifying areas for substance abuse prevention. These findings call into question the appropriateness of using many of the community-level indicators for the purpose of assessing

adolescent substance use prevention needs. However, it would be premature to completely dismiss them as useful measures. In fact, these indicators reflect justifiable target outcomes in their own right and may also be related to other problem behaviors, even if not positively related to individual indicators of substance use. Social indicator analyses are beneficial for a number of other reasons, including:

- easy access;
- low cost;
- consistency in availability across diverse geographic locations; and
- available at county (and sometimes lower) geographic levels.

However, caution needs to be applied when aggregating and correlating social indicator data with school survey data for the purpose of identifying high-risk service areas for substance abuse.

Because the analyses conducted for this report are cross-sectional, they cannot be used to establish causal connections between social indicators and substance use prevalence. Nevertheless, prevention planners should be aware of the poor associations and, consequently, be cautious in using neighborhood and community-based indicators to assess levels and types of substance abuse prevention needs. At the present, there is much stronger support for survey-derived measures of risk in the family, school, community, and peer/individual domains as valid indicators of substance abuse prevention needs, and these should be afforded greater weight in prevention planning and resource allocation decisions. In addition, several other limitations apply when drawing conclusions from aggregate rather than individual-level data. For instance, correlations computed at the aggregate level tend to be larger and possibly inverted compared to those computed at the individual level because of the removal of random individual error variance (Hawkins, Arthur, & Catalano, 1997). Differences in aggregated versus individual-level correlations may also be due to the reduction in sample size and subsequent loss of power or other confounds that occur when data from heterogeneous geographic areas are collapsed.

In this report, we also rely on the use of GIS to illustrate varying levels of risk and need for prevention services. GIS is an important but under-utilized resource in the analysis of community-level data. Researchers have shown that certain spatial/geographic factors are associated with substance abuse. For example, differences in alcohol availability as measured by licensed liquor outlets have been linked to differences in motor vehicle crashes and violence (Gruenewald, Millar, & Treno, 1993; Scribner, MacKinnon, & Dwyer, 1994; Scribner, MacKinnon, and Dwyer, 1995). Although the potential benefits of using GIS to inform

substance abuse prevention planning are great, the limitations to GIS should be kept in mind. First, geocoding public health data can be expensive and time consuming. Whenever possible, it would save time and money to use GIS data that are available from major Federal agencies or commercial sources. Second, it is important to realize that by dividing the service areas into quartiles, the mapping function may overstate differences across areas. There may only be slight differences between service area values that fall in one quartile versus another. Thus, it is important to consider information on the actual proportions or rates before decisions are made about what defines high-risk areas. Third, spatially referenced data from government sources may be incomplete and/or inaccurate because of under-reporting or coding and diagnostic errors. In addition, detailed spatial data are often not included in official statistics, and information may be inconsistent or incompatible between sources. Finally, prevention planners should be aware of the potential for ecological fallacy as a general limitation of GIS. As described earlier, inaccuracies may occur when one makes conclusions about individuals based on results of data aggregated to another level of analysis (e.g., service area). This sometimes leads to unreliable inferences. For example, if a service area has a relatively high rate of births to teen mothers, that does not necessarily mean that an individual girl from that service area will become a teen mother. Although inferences from aggregate data often are required in investigations of substance abuse prevention need, it is important to keep in mind that the results refer to groups, not individuals.

Despite these limitations, results from the integrative study highlight specific geographic areas with higher than average rates of risk. This information can now be teamed with knowledge regarding effective programs specifically designed to reduce or eliminate risk factors in specific domains. Two tables (see Tables 3.1 and 3.2) provide information on CSAP model programs and the domains they are designed to impact.

CSAP has created the National Registry of Effective Prevention Programs (NREPP) as a resource to guide States in identifying programs likely to have the greatest impact. Programs included in NREPP have been reviewed on multiple criteria and found to be effective based on consistent and positive patterns of results. Model programs are effective interventions whose developers have the capacity to provide quality training and technical assistance to practitioners who wish to implement their program (CSAP, 2002). Thus, service area providers in areas with high family risk factors can purposely select programs to implement in their communities that target family risk factors such as conflict, discipline, communication, and parental monitoring skills. Likewise, service areas with higher than average rates of community risk may choose to focus on preventive interventions designed to alter the availability of substances or promote greater enforcement of laws prohibiting sales to minors.

Table 3.1 Abbreviated CSAP Model Program Matrix

Program Name	Domain Impacted	Program Description	Findings
Across Ages	Individual School Peer	Adults mentor youth Community service Life skills development Parent support	Improved school attendance Improved understanding of adults Improved attitudes toward adults
All Stars	Individual Family School Peer	Positive peer norm development Increase school bonding Parent support	Reduced drug use Reduced sexual activity Reduced reported violence Increased bonding w/ school and family
Athletes Training and Learning to Avoid Steroids (ATLAS)	Individual School Peer Community	Youth leadership training Peer-led sessions Resistance skills development Sports nutrition education	Reduced drinking and driving Decreased anabolic steroid use Decreased athletic supplements use Decreased alcohol/illicit drug use
Brief Strategic Family Therapy	Individual Peer Family School	Problem-focused family therapy Correct maladaptive behaviors Facilitate healthy family	Reduced drug use Reduced emotional/behavioral problems Improved family functioning
Bullying Prevention Program	Individual School Peer	Restructure school environment Increase positive involvement and supervision from teachers Use consistent, non-hostile sanctions	Reduced students' reports of being bullied Reduced students' reports of bullying others Reduced antisocial behavior

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Child Development Project	Individual Peer Family School	Coping & life skills Increase bonding to school and peers	Decreased substance use Increased liking for school, enjoyment of class, and motivation to learn Improved conflict resolution skills
Communities Mobilizing for Change on Alcohol	Peer Community	Mobilize & organize community	Less likely to buy alcohol or bar drink Increased identification (ID) checks Reduced sales to minors Decreased driving under the influence (DUI) arrests
Community Trials Project	Community	Mobilize & organize community Provide responsible beverage service training Enforce underage drinking laws	Reduced underage access to alcohol Reduced sale of alcohol to minors Reduced alcohol-related vehicular accidents
Coping Power Program	Individual School Peer	Enhance social competence Increase bonding to school & family Improve parenting skills	Reduced disruptive/aggressive behavior Decreased substance use Increased self-esteem
Creating Lasting Connections	Individual Family Community	Develop coping and life skills Individual/group counseling Improve parenting skills	Increased child resiliency Increased family norm-setting on substance use Delayed onset of substance use

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
DARE to Be You	Individual Family School Community	Coping & life skills development Peer mentoring Support & self-help groups Parent education	Increased parent efficacy Increased child development skills
Early Risers “Skills for Success”	Individual Family School Peer	Social skills development Increase academic skills Parent education and training	Improved social skills Improved academic achievement Increased parent involvement Reduced impulsivity
Fairfax Leadership & Resiliency Program	Individual Peer School Community	Individual/group counseling Bonding to school & family Improve social competence	Reduced school absences Reduced disciplinary referrals Increased grade point average (GPA) & graduation rate
Family Advocacy Network (FAN Club)	Individual Peer Family	Cultural values promotion Parent/family activities Parenting skills classes	Increased ability to refuse alcohol, marijuana, & cigarettes Increased knowledge of risks of alcohol, tobacco, & illicit drugs
Family Effectiveness Training	Individual Peer Family School	Targets intergenerational and intercultural conflict Restructure maladaptive behavior Healthy family interactions trainings	Improved school performance Reduced problem behavior Improved child concept and family functioning

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Incredible Years	Individual Peer Family School	Coping & life skills training Increase social & academic competence Parenting training	Reduced problem behaviors Increased social competence Increased academic engagement
Keep a Clear Mind	Individual Peer Family	Resistance skills Alcohol & drug information Foster family support	Increased resistance skills Increased parent-child discussions about substance use
Life Skills Training	Individual Peer Family School	Enhance self-esteem Interpersonal & communication skills Develop resistance skills	Increased resistance skills Decreased rates of substance use Increased ability to cope with stress
Multisystemic Therapy Program	Family Community	Family sessions at home Improve parenting skills Improve family & peer relations Improve school performance	Reduced rates of arrest and out-of-home placements Improved family functioning Decreased mental health problems
Nurse-Family Partnership	Individual School Community	Family sessions at home Prenatal, infant, and early child education Build supportive relationships	Reduced cigarette smoking during pregnancy Reduced rates of child abuse Fewer subsequent births Fewer maternal behavior problems

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Positive Action	Individual Peer Family School Community	Restructure school environment Enhance self-management skills Enhance social skills Improve self-concept	Improved achievement scores Fewer violent incidents Fewer out-of-school suspensions Fewer chronic absentees
Preparing for the Drug-Free Years	Individual Peer Family School	Family sessions Enhance parenting skills Improve family/peer relations Coping & life skills development	Reduced antisocial behavior Fewer incidents of drug use in school Improved parenting behaviors
Project Achieve	Individual Peer Family School	Improve classroom management skills for teachers Enhance problem-solving skills Increase social & academic progress	Decreased special education referrals/placement Reduced disciplinary referrals Improved academic performance
Project Alert	Individual Peer Family School	Enhance decision-making, resistance, & interpersonal skills Provide alcohol/drug information Conduct parent activities	Decreased initiation of marijuana use Decreased current & heavy smoking Reduced pro-drug attitudes/beliefs
Project Northland	Individual/peer Family School Community	Alcohol & drug information Peer mentoring Enhance interpersonal skills Assist with parenting skills	Reduced alcohol & tobacco use Decreased peer influence to use alcohol Improved parent-child communication about alcohol risks

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Project SUCCESS	Individual Peer Family School	Prevention education & referral Coping & life skills development Conduct parent activities	Reduced alcohol, tobacco, & other drug use Reduced problem behaviors
Project Toward No Tobacco Use	Individual Peer Family School Community	Interpersonal & decision-making skills Build resistance to peer & media pressure Facilitate attitude change	Reduced initiation of cigarette smoking Reduced initiation of smokeless tobacco use Reduced cigarette smoking Eliminated smokeless tobacco use
Reconnecting Youth Program	Individual Peer Family School	Improve coping & life skills Enhance interpersonal & decision-making skills Peer mentoring	Improved school grades & attendance Reduced drug use Decreased emotional distress Increased self-esteem, personal control, pro-social peer bonding, & social support
Residential Student Assistance Program	Individual Peer Community	Alcohol & drug education Enhance interpersonal & decision-making skills Individual, group, & peer counseling	Decreased alcohol, tobacco, and marijuana use
SAFE Children Project	Individual School Community	Family group sessions Enhance parent-child communication One-on-one tutoring	Greater use of effective parenting practices Increased social competence

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Skills, Opportunities, and Recognition (SOAR)	Individual Peer Family School	Improve resistance skills Increase school and parent bonding Coping & life skills development	Reduced antisocial behaviors Improved academic skills Fewer incidents of drug use at school
Students Managing Anger and Resolution Together (SMART)	Individual Peer	Improve resistance skills Increase school and parent bonding Coping & life skills development	Decreased alcohol, tobacco, marijuana, & illicit drug use Fewer perceived benefits of alcohol & marijuana use Increased knowledge of substance risks
Social Competence Program	Individual School	Stress management & problem-solving skills education Social networking Alcohol & drug education	Improved problem-solving & stress-management skills Increased conflict resolution and impulse control skills
STARS for Families	Individual Peer	Stress-management skill-building activities Problem-solving skills activities ATOD education	Reduced initiation of alcohol use and heavy drinking
Stop Teenage Addiction to Tobacco	Community	Merchant education Community support development Actively enforce underage drinking laws	Improved merchant compliance of tobacco lockout devices on cigarette machines Reduced tobacco use

(continued)

Table 3.1 (continued)

Program Name	Domain Impacted	Program Description	Findings
Strengthening Families Program	Individual	Education services	Decreased ATOD use
	Peer	Coping and life skills education	Improved social & life skills
	School	Family-strengthening education	Improved parent-child attachment
	Family	Alternative family drug-free activities	Improved family relations/ communication Improved parenting skills Decreased behavior problems
Towards No Drug Use	Individual	Coping and life skills education	Reduced higher levels of alcohol use
	Peer	Peer pressure resistance training	Reduced hard drug use
	School	Attitudinal change	
	Family		
	Community		

Table 3.2 CSAP Model Programs and the Domains They Are Designed to Impact

Program Name	Domain				
	Individual	Peer	Family	School	Community
Across Ages	✓	✓		✓	
All Stars	✓	✓	✓	✓	
Athletes Training and Learning to Avoid Steroids (ATLAS)	✓	✓		✓	✓
Brief Strategic Family Therapy	✓	✓	✓	✓	
Bullying Prevention Program	✓	✓		✓	
Child Development Project	✓	✓	✓	✓	
Communities Mobilizing for Change on Alcohol		✓			✓
Community Trials Project					✓
Coping Power Program	✓	✓		✓	
Creating Lasting Connections	✓		✓		✓
DARE to Be You	✓		✓	✓	✓
Early Risers “Skills for Success”	✓	✓	✓	✓	
Fairfax Leadership & Resiliency Program	✓	✓		✓	✓
Family Advocacy Network (FAN Club)	✓	✓	✓		
Family Effectiveness Training	✓	✓	✓	✓	
Incredible Years	✓	✓	✓	✓	

(continued)

Table 3.2 (continued)

Program Name	Domain				
	Individual	Peer	Family	School	Community
Keep a Clear Mind	✓		✓		
Life Skills Training	✓	✓	✓	✓	
Multisystemic Therapy Program			✓		✓
Nurse-Family Partnership	✓			✓	✓
Positive Action	✓	✓	✓	✓	✓
Preparing for the Drug-Free Years	✓	✓	✓	✓	
Project Achieve	✓	✓	✓	✓	
Project Alert	✓	✓	✓	✓	
Project Northland	✓	✓	✓	✓	✓
Project SUCCESS	✓	✓	✓	✓	
Project Toward No Tobacco Use	✓	✓	✓	✓	✓
Reconnecting Youth Program	✓	✓	✓	✓	
Residential Student Assistance Program	✓	✓			✓
SAFE Children Project	✓			✓	✓
Skills, Opportunities, and Recognition (SOAR)	✓	✓	✓	✓	
Social Competence Program	✓			✓	

(continued)

Table 3.2 (continued)

Program Name	Domain				
	Individual	Peer	Family	School	Community
STARS for Families	✓				
Stop Teenage Addiction to Tobacco					✓
Strengthening Families Program	✓	✓	✓	✓	
Students Managing Anger and Resolution Together (SMART)	✓	✓			
Towards No Drug Use	✓	✓	✓	✓	✓

This report highlights the importance of including data in comprehensive prevention systems and provides several ways in which service areas can be profiled or data can be displayed in order to guide decisions about the type and extent of prevention resources needed in specific planning areas. The demands of a substance abuse prevention system are continually evolving but, generally, are requiring greater emphasis on data or research-driven approaches. Thus States need to identify ways in which data can be obtained, stored, and used in feasible and cost-effective ways within the system. Effective prevention systems will be those that have successfully incorporated knowledge about needs in their communities with information on available resources and effective approaches. The challenge of substance abuse prevention planning is to determine how to best allocate scarce resources to meet the needs of residents of the State.

3.1 Recommendations

Based on findings from this report, we offer the following recommendations to help guide the State of Missouri as it looks to enhance its prevention system.

- Continue to participate in the CTC Survey (or other similar surveys) that capture the level of risk and protective factors and substance use of youth in the State. These surveys are critical in identifying upward or downward trends in substance use patterns and in rapidly intervening. Moreover, surveys such as the CTC provide essential information for guiding prevention services in achieving the best fit with current needs.
- Consider administering the CTC survey to all students across the State. The current study explored planning decisions at the service area level, because it was not possible to obtain accurate survey data at a smaller geographic level (the sample sizes were too small). Larger samples of youth participating in the CTC would allow for more localized planning. Currently, data from large, heterogeneous areas were combined to determine average values for risk and prevalence data across the service area. By averaging across such large geographic regions, we risk the possibility that information about local areas with very high levels of substance use or risk were lost because the data were merged with those from other areas with lower values. Thus, larger sample sizes of CTC data would allow for more precise determination of high-risk or problem areas at a more localized level.
- Consider participation in the Center for Substance Abuse State Incentive Grant (SIG) program. The SIG provides considerable resources to States to implement and evaluate research-based programs and provides opportunities to utilize community-based coalitions and Statewide advisory boards to enhance collaboration and leverage prevention

resources. Participation in the SIG would provide additional resources and opportunities to the State to enhance the substance abuse prevention system.

- Use GIS technology to integrate, analyze, and map data at various geographic levels (e.g., county, service area, region). As can be seen in this report, GIS technology provides advantageous tools for coordinating and reviewing disparate data. A research-based approach to prevention planning requires knowledge of community characteristics, as well as extensive data about risk factors and prevalence rates at the community or service area level. Presentation of data through mapping is one way to provide easy-to-interpret ways to distinguish high- versus low-risk areas. In addition, this information can be shared easily via the Internet. One of the emerging GIS technologies is that of the Internet Map Server (IMS), which allows users access to mapping capabilities and spatial queries through the use of a Web browser such as Netscape or Internet Explorer. Thus, regional subcontractors and providers could have access to extensive and comprehensive data about their specific planning area via the Internet.
- Maintain focus on model programs. Extensive efforts have been taken by Federal agencies such as SAMHSA, CSAP, Department of Education (ED), NIDA, Office of Juvenile Justice and Delinquency Prevention (OJJDP), and the Centers for Disease Control and Prevention (CDC) to create evidence-based guides that are useful and easy to read. Many of these guides are available on websites or through government publishing clearinghouses. The guides summarize substance abuse prevention programs that have been proven effective through rigorous, scientific outcome studies. Information about training and implementation of these studies is also available through model program websites and guides. Thus, to maximize the effectiveness of prevention services, the use of evidence-based or science-based programs should be a cornerstone of state prevention services.
- Conduct a gap analysis. In this study we were unable to include information about the characteristics and distribution of prevention services. Making fully informed decisions about how to allocate resources requires a thorough knowledge of prevention resources and their current distribution. This knowledge, in combination with information about the extent and distribution of risk factors for substance use and the knowledge of effective programs, is at the core of informed decisions about how best to use prevention resources to maximize benefits for Missouri youth, and adults.

EXECUTIVE SUMMARY

Over the past several years, the State of Missouri has conducted a number of needs assessment studies to determine the prevalence of alcohol, tobacco, and illicit drug use and risk factors for substance abuse among youth and adults across the state. These studies were designed to identify populations and geographic areas at greatest risk for substance abuse problems. The four studies comprising Missouri's State Prevention Needs Assessment Studies: Alcohol and Other Drugs are summarized below.

Studies Comprising Missouri's State Prevention Needs Assessment Project: Alcohol and Other Drugs

Study	Purpose	Method
1. Substance Use, Delinquent Behavior, and Risk and Protective Factors Among Students in the State of Missouri 2000 (Greene & Rachal, 2001)	To assess the prevalence of substance use, antisocial behaviors, and community, school, family, and peer-individual risk and protective factors of adolescents enrolled in public or private schools in Missouri.	Survey data were collected from 254 public and private schools in Missouri. Almost 10,000 students were surveyed in grades 6, 8, 10, and 12. The overall response rate was 65%.
2. Substance Use Prevention Needs in Missouri Counties: A Risk Assessment Using Social Indicators (Sanchez & Weimer, 2002)	To characterize counties with respect to substance abuse prevention needs using indicator data obtained from archival sources.	Obtained 44 social indicators for each county for the five most recent years. These indicators were reduced to represent fewer risk constructs. The standardized values of the risk constructs were presented as county profiles, thus providing a way to compare counties to the State average on all constructs.
3. Missouri State Prevention Resource Assessment (Spencer, 2002)	To assess substance abuse prevention resources administered by State departments and agencies.	Developed a survey instrument and data collection protocol to use to survey state agencies on the content, objective, and distribution of substance abuse prevention resources throughout state.
4. Integrative Findings from the Missouri Substance Abuse Prevention Needs Assessment Project (Herman-Stahl & Proescholdbell, 2002)	To integrate data regarding the prevalence of substance use and other problem behaviors, risk and protective factors, community archival indicators, and to assist the State in identifying high risk areas for the purpose of planning and resource allocation.	Using Geographic Information Systems (GIS), this study integrated various prevention-related constructs to provide layered mapping and spatial analysis.

This report focuses on the integration of data and findings from the Missouri 2000 school survey and social indicator reports. The purpose of this study was to promote the use of research-based prevention by integrating and applying empirical data and utilizing state-of-the-art technology to examine the geographic distribution of substance use, risk factors, and other indicators associated with high risk communities. This information is critical for identifying target populations and selecting substance abuse prevention strategies that have been proven effective in meeting identified community needs. The specific objectives of the Missouri Substance Abuse Prevention Integrative study included:

- # To assist substance abuse prevention professionals in determining priority foci for statewide public policy and prevention programming by integrating data on adolescent risk and protective factors, substance use and antisocial behavior, and community indicators of social problems;
- # To utilize state-of-the-art technologies like Geographic Information Systems (GIS) for accessing, viewing, and analyzing the geographic distribution of substance abuse prevention-related constructs at the service area level; and
- # To promote the use of data driven approaches within a comprehensive, research-based prevention system in order to identify, select, disseminate, and implement best practices for substance abuse prevention for Missouri youth and adults.

States looking to advance their prevention systems are moving toward research-based approaches to guide policy and programmatic decision-making. A central feature of research-based planning models is that they rely on objective and quantitative data to guide and justify planning and resource allocation decisions. Objective data are needed to identify high risk populations, characterize the diverse types of prevention need across these groups, justify the approaches selected, and assess the effectiveness of those efforts. An integrated, research-based prevention system also utilizes proven strategies and programs for the purpose of decreasing or delaying substance use.

Researchers have made great strides in understanding the causes, consequences, and prevention of substance use and abuse over the last few decades. A large body of information is now available that identifies the individual, family, school, and community factors that predict substance abuse (Catalano, & Miller, 1992). Because risk factors precede the development of substance abuse behaviors, they have become a fundamental component in the process of assessing the risk status and prevention needs of individuals and/or population subgroups. A growing body of evidence is available that documents evidence-based prevention programs that

have been evaluated using scientifically rigorous designs and shown to lower substance use or decrease the risk factors associated with use. Thus, there is a need to integrate data on the prevalence of risk factors for substance abuse with information about geographic areas and effective programs. Fortunately, recent developments in prevention research and information management systems provide exceptional new tools for supporting integrated prevention systems. One such tool is GIS technology. GIS is a geographic database management system that provides users with powerful capabilities for viewing and analyzing geographic data and performing spatial analysis. The geographic data consist of a series of spatially-referenced map layers that contain information about features that are located in specific locations. These maps allow prevention planners and providers to visually inspect planning areas for their relative ranking on risk factors for substance abuse.

In this study, data on adolescent risk and protective factors, substance use, and antisocial behaviors were assessed using the 2000 Missouri School Survey (Greene & Rachal, 2001). These data were collected from 254 public and private schools across the state. Almost 10,000 students were surveyed in grades 6, 8, 10 and 12. Students reported on their lifetime and past month use of alcohol, tobacco, and illicit drugs. Information about risk and protective factors in the community, school, family, peer, and individual domain were also collected. In addition, archival indicators describing counties were collected to integrate with school survey data. Social indicators used in this study include juvenile arrest rates, population density, information on poverty and divorce, liquor outlet density, school achievement scores, teen birth rates, and information on the rates of communicable diseases (Sanchez & Weimer, 2002). All data were aggregated to the service area level and several small service areas were combined. In total, data were presented for 17 service areas.

In order to determine which of the numerous prevention-related constructs are most useful for prevention planning at the aggregate level, we used correlational analyses to examine the strength of associations between risk and protective factors, social indicators, and substance use. Based on these findings as well as other considerations such as the Division of Alcohol and Drug Abuse's strategic plan, we selected a subset of school survey and social indicator variables which appeared most useful for prevention planning to map and profile at the service area level.

The profiles were used to display aggregated service area scores for factors relating to youth substance use and abuse; youth problem behaviors; and community, school, family, and peer-individual risk and protective factors. These profiles provide prevention planners with an easy to read resource for assessing how each service area ranks compared to the State average on a number of important risk and health promotion variables. In addition, these data were

presented using GIS technology to create maps of service areas shaded to represent their relative ranking on substance abuse prevention-related factors.

Results suggest that several variables from the Missouri School Survey (the Communities that Care Survey) stood out as significant risk factors for identifying service areas with a higher than average proportion of youth who are likely to develop substance abuse problems. Specifically, service areas with high levels of substance use tended to have

- # more youth with high perceptions of drug availability;
- # lax enforcement of drug-related laws;
- # community norms favorable to substance use;
- # lower proportions of youth with strong commitments to school;
- # more families with poor parenting skills (high conflict, inappropriate discipline, and poor family management);
- # more parents with favorable norms toward substance use;
- # more youth who reported friends who drank alcohol or used drugs; and
- # more youth who perceived substance use as low risk.

The social indicators were not as useful as the school survey data for identifying service areas at high-risk for substance abuse. Many social indicators were not correlated or were correlated in the opposite direction from what was expected. Indicators were slightly more useful in identifying areas with high rates of antisocial behavior. Specifically, service areas with high rates for juvenile arrests, sexually transmitted diseases, teen births, and poor school achievement were more likely to have high rates of antisocial behavior and gang involvement. Thus, results suggest that there is stronger support for using survey-derived measures of risk as opposed to archival social indicators for determining community substance abuse prevention needs.

This report highlights the importance of including data in comprehensive prevention systems and provides several ways in which service areas can be profiled or data can be displayed in order to guide decisions about the type and extent of prevention resources needed in specific planning areas. The demands of a substance abuse prevention system are continually evolving but generally are requiring greater emphasis on data or research-driven approaches. Thus, states need to identify ways in which data can be obtained and used in feasible and cost-

effective ways within the substance abuse prevention system. Effective substance abuse prevention systems will be those that have successfully incorporated knowledge about substance abuse prevention needs in their communities with information on available resources and effective approaches. The challenge of substance abuse prevention planning is to determine the most effective way to allocate scarce resources to best meet the needs of residents in the State. Specific recommendations include:

- # Continue to participate in the Communities that Care (CTC) or other similar surveys that capture the level of risk and protective factors and substance use among youth in the State. These surveys are critical in identifying high risk areas and trends in substance use patterns. Moreover, surveys such as the CTC provide essential information for guiding prevention services to have the best fit with current needs.
- # Consider implementing the CTC survey to all students across the State. The current study explored planning decisions at the service area level, because it was not possible to obtain accurate survey data at a smaller geographic level (The survey sample sizes were too small.). Larger samples of youth participating in the CTC would allow for more localized planning. Currently, the data from large, heterogeneous areas were combined to determine the average value for risk and prevalence data across the service area. By averaging such large geographic regions, we risk the possibility that information about local areas with very high levels of substance use were lost because the data were merged with those from other areas with lower values. Thus, larger sample sizes of CTC data would allow more precise determination of high-risk or problem areas at a more localized level.
- # Consider participation in the Center for Substance Abuse Prevention State Incentive Grant (SIG) program. The SIG provides considerable resources to States to implement and evaluate research-based programs and provides opportunities to utilize community coalitions and Statewide advisory boards to enhance collaboration and leverage prevention resources. Participation in the SIG would provide additional resources and opportunities to the State to enhance the substance abuse prevention system.
- # Use Geographic Information System (GIS) technology to integrate, analyze, and map data at various geographic levels (e.g., county, service area, region). GIS technology provides advantageous tools for coordinating and reviewing disparate data. A research-based approach to prevention planning requires knowledge of community characteristics as well as extensive data about risk factors and prevalence rates at the community or service area level. Presentation of these data through mapping is one way to provide easy-to-interpret ways to distinguish high versus low risk areas. In addition, this information can be shared easily via the Internet. One of the emerging GIS technologies is that of the Internet Map Server

(IMS), which allows users to access mapping capabilities and spatial queries through the use of a web browser such as Netscape or Internet Explorer. Thus, regional subcontractors and providers could have access to extensive and comprehensive data about their specific service area via the Internet.

- # Maintain emphasis on use of research-based programs. Extensive efforts have been undertaken by Federal agencies to create evidence-based guides that are useful and easy to read. Many of these guides are available on websites or through government publishing clearinghouses. The guides summarize substance abuse prevention programs that have been proven effective through rigorous, scientific outcome studies. Information about training and implementation of these studies is also available through model program websites and guides. In order to maximize the effectiveness of prevention services, the use of evidence-based programs should be a cornerstone of the substance abuse prevention system.
- # Conduct a gap analysis. In this study, we were unable to include information about the characteristics and distribution of prevention resources. Making fully informed decisions about how to best allocate resources requires a thorough knowledge of prevention resources and their current distribution. This knowledge, in combination with information about the extent and distribution of risk factors for substance use, and the knowledge of effective programs is at the core of informed decisions about how to best allocate prevention resources to maximize benefits to Missouri youth and adults.

REFERENCES

- Arthur, M. W., & Blitz, C. (2000). Bridging the gap between science and practice in drug abuse prevention through needs assessment and strategic community planning. *Journal of Community Psychology*, 28, 241-256.
- Arthur, M. W., Shavel, D. A., Tremper, M., Hawkins, J. D., & Hansen, C. (1997). *Assessing State Prevention Resources* (a manuscript prepared under contract #277-93-1013 from the National Center for the Advancement of Prevention [NCAP], Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration). Seattle, WA: Social Development Research Group.
- Center for Substance Abuse Prevention (CSAP). (2002, April). *Bringing effective prevention to every community: Update on progress in identifying CSAP model programs, synthesizing research findings, and disseminating knowledge*. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Rockville, MD.
- Greene, J. M., & Rachal, J. V. (2001, February). *Substance use, delinquent behavior, and risk and protective factors among students in the State of Missouri: 2000*. Final report prepared for the Missouri Department of Mental Health, Division of Alcohol and Drug Abuse. Research Triangle Park, NC: Research Triangle Institute.
- Gruenewald, P. J., Millar, A., & Treno, A. J. (1993). Alcohol availability and the ecology of drinking. *Alcohol Health and Research World*, 17, 39-45.
- Hanchette, C. L. (1999). GIS and decision-making for public health agencies: Childhood lead poisoning and welfare reform. *Journal of Public Health Management and Practice*, 5, 41-47.
- Hawkins, J. D., Arthur, M. W., & Catalano, R. F. (1997). *Six state consortium for prevention needs assessment studies: Alcohol and other drugs*. Final report for SAMHSA Contract No. 277-94-1014-SDRG. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse and prevention. *Psychological Bulletin*, 112, 64-105.
- National Institute of Drug Abuse (NIDA). (1997). *Preventing drug use among children and adolescents: A research-based guide*. Rockville, MD. National Institute of Health, U.S. Department of Health and Human Services.
- Sanchez, R. P., & Weimer, B. J. (2002, November). *Assessing substance use prevention needs using social indicators*. Final report prepared for Missouri Department of Mental Health, Division of Alcohol and Drug Abuse. Research Triangle Park, NC: Research Triangle Institute.

- Scribner, R. A., MacKinnon, D. P., & Dwyer, J. H. (1994). Alcohol outlet density and motor vehicle crashes in Los Angeles County cities. *Journal of Studies on Alcohol*, 55, 447–453.
- Scribner, R. A., MacKinnon, D. P., & Dwyer, J. H. (1995). The risk of assaultive violence and alcohol availability in Los Angeles County. *American Journal of Public Health*, 85, 335–340.
- Spencer, D. M. (2002, December). *Missouri State Prevention Needs Assessment: State Prevention Resource Survey*. Final report for Missouri Department of Mental Health, Division of Alcohol and Drug Abuse. Research Triangle Park, NC: Research Triangle Institute.
- Substance Abuse and Mental Health Services Administration (SAMHSA). (2002). SAMHSA Budget Information, Fiscal Year 2003 Budget [Online]. Retrieved July 29, 2002, from <http://www.samhsa.gov/budget/content/2003/2003budget-04.htm>.